Comment Letter from Los Angeles Department of Water & Power (Comment Letter #46)

Los Angeles Department of Water & Power

August 19, 2016

Mr. Michael Krause
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Dear Mr. Krause:

Subject: Los Angeles Department of Water & Power's Comments on Draft 2016 Air Quality Management Plan

The Los Angeles Department of Water & Power (LADWP) appreciates the opportunity to provide comments on the Draft 2016 Air Quality Management Plan (AQMP). LADWP supports South Coast Air Quality Management District's (SCAQMD) efforts to further develop efficient and effective policies to reduce emissions in order to meet the federal standards in the South Coast Air Basin (SCAB).

Serving approximately 1.4 million customers in Los Angeles with a generating capacity of over 7,300 megawatts, LADWP is the largest municipal electric utility in the nation, and the third largest electric utility in California. LADWP is a vertically integrated utility, owning and operating a diverse portfolio of generation, transmission, and distribution assets spanning several states.

All of LADWP's generating units are equipped with Best Available Retrofit Control Technology (BARCT) or Best Available Control Technology (BACT) and have reduced NOx emissions by 90 percent. As part of its modernization efforts, since the 1990's, LADWP has been replacing its existing, less efficient utility boilers in the South Coast Air Basin with new, state-of-the-art combined-cycle and simple cycle turbine systems equipped with selective catalytic reduction technology to minimize NOx emissions. During this modernization process, LADWP's generating facilities have been subject to New Source Review and are equipped with BACT. 46-1

LADWP also continues to make unprecedented investments in renewable energy resources, energy efficiency and transportation electrification to improve the environment. LADWP is on track to meet 33 percent of its energy sales from renewable energy resources by 2020, has a goal to achieve 15 percent energy savings by 2020, and is continuing to implement programs to support the electrification of the transportation sector to reduce greenhouse gases and criteria pollutants, including NOx, and as a potential solution to absorb over-generation from solar renewable sources.

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Telephone: (213) 367-4211 www.LADWP.com

LADWP's provides comments on SCAQMD's proposed regulatory language and draft preliminary draft staff report below. 46-1 Con't

CTS—01 Further Reductions from Coatings, Solvents, Adhesives, and Sealants

As the draft AQMP states, this control measure "seeks limited VOC emission reductions by focusing on select coating, adhesive, solvent and sealant categories by further limiting the allowable VOC content in formulations or incentivizing the use of super-compliant technologies." The AQMP states that VOC reductions could be achieved by lowering the VOC content of source categories within SCAQMD source-specific rules such as Rule 1171. LADWP has concerns with respect to amendments to these rules as it operates and maintains a number of equipment to maintain grid reliability.

LADWP, as well as owners/operators of electric generating facilities in the SCAB, operate and maintain electric system components, circuit breakers and continuous emissions monitoring system (CEMS) analyzers. LADWP uses denatured alcohol, which is subject to rule 1171, to clean the optical sensing elements in the CEMS. With respect to the cleaning of circuit breakers, the manufacturers specify the use of denatured alcohol. The potential consequences of not using denatured alcohol is that the warranty would be voided and/or the circuit breaker would not function properly (leading to possible power outage, fire or explosion, release of SF6 insulating gas into the atmosphere, violation of the SF6 emission limit). Any alternative to denatured alcohol cannot leave a residue as it could provide a path to ground to electricity and the contaminants in the residue could cause flash over and/or prevent SF6 from reforming properly after extinguishing an arc. 46-2
To date, LADWP has not found a safe and effective alternative to denatured alcohol.

LADWP and Southern California Edison have had several discussions with the California Air Resources Board (CARB) with respect to the above described concerns and its Consumer Products Regulation requirements. CARB is working with the utilities to determine how to address the issue. If SCAQMD amends Rule 1171 with respect to use of denatured alcohol, LADWP recommends that SCAQMD work closely with the electric utilities to ensure that alternative solvents are safe and effective.

Electricity Sources

Figure 10-10 shows the percentage breakdown of the generation mix for electricity supplied to the Los Angeles (LA) Basin from LADWP which would not only include electricity supplied from its LA Basin generating facilities, but also electricity from its generating facilities within California but outside the LA Basin and generating facilities outside California. However, since the 2016 AQMP does not address the emissions associated with electricity imports *into* the Basin, the information in Figure 10-10 could cause confusion. If SCAQMD intends to show this information, it should clarify that the 46-3

emissions associated with electricity generated outside the LA Basin would not be subject to SCAQMD jurisdiction.

The discussion in this section states that LADWP's energy supply from coal has remained constant at 40 percent based on the CEC Utility Annual Power Content Labels for 2014. To provide an update for inclusion into the 2016 AQMP, on July 1, 2016, LADWP completed its divestiture from its 21.2 percent ownership of Navajo Generating Station, a coal-fired facility located in Arizona, three-and-a-half years ahead of schedule. LADWP's energy supply from coal is projected to be between 28 and 30 percent without Navajo Generating Station.

46-3 Con't

ECC-01 – Co-Benefit Emission Reductions from GHG Programs, Policies, and Incentives
ECC-02 – Co-Benefits from Existing Residential and Commercial Building Energy Efficiency Measures

LADWP supports the above stated control measures that recognize criteria pollutant emission reductions from energy and climate change related programs that also significantly reduce greenhouse gas (GHG) emissions. LADWP supports SCAQMD's efforts to take advantage of the co-benefit emission reductions from implementation of State regulations such as the AB 32 cap-and-trade, renewable portfolio standard, California's Title 24 program and SB 350's energy efficiency goal and energy targets.

46-4

State Implementation Plan Crediting to Accommodate Electrification

As the AQMP states, an essential part of the strategy to reduce NO_x levels in the SCAB region will be to electrify sources and thereby eliminate the NO_x emissions that currently result from their burning of fossil fuels. Specifically, the increased electricity generation will result in small increases in NO_x emissions by affected electric generating facilities, but those emissions will be more than offset by substantial NO_x emission reductions achieved by the newly electrified sources. Electrification of even portion of these sources will result in substantial overall NO_x reductions.

An important element of this strategy is for SCAQMD to work with the U.S. Environmental Protection Agency (EPA) to develop a mechanism for accounting for and providing emission reduction credit to the owners and operators of affected electric generating facilities for the net NO_x emission reductions achieved in the SCAB through the electrification of other source categories within the basin. This emission reduction crediting mechanism would demonstrate how the SCAQMD will meet its obligations to attain and maintain the air quality goals under the Clean Air Act. At present, there is not any EPA-recognized state implementation plan (SIP) mechanism that accounts for and provides the appropriate credit to electric utilities for emissions reductions achieved by the electrification of other source categories. LADWP urges SCAQMD to work with key

46-5

EPA staff (both at headquarters and Region 9) to develop a SIP crediting mechanism modeled after approaches that EPA has developed for promoting energy efficiency and renewable energy measures as an acceptable approach for the SCAQMD and other state authorities to meet their ozone reasonable further progress goals for reducing NO_x emissions under the Clean Air Act. 46-6

Development of an EPA-recognized SIP crediting mechanism will address the regulatory uncertainty that would otherwise result from this paradigm shift and thereby encourage the implementation of policies to reduce emissions from the transportation and major source categories of emissions through electrification in the South Coast Air Basin and other urban ozone nonattainment areas.

Conclusion

Again, LADWP appreciates the opportunity to provide comments on the 2016 Draft AQMP. If you have any questions or would like additional information, please contact Ms. Jodean Giese of my staff at (213) 367-0409.

Sincerely,

Mark J. Sedlacek
Director of Environmental Affairs

JG:dms
Enclosures
c: Ms. Jodean Giese

Responses to Comment Letter from Los Angeles Department of Water & Power (LADWP)
(Comment Letter #46)

Response to Comment 46-1:

Staff appreciates the interest and participation in the development of the 2016 AQMP as well as investments in renewable energy resources, energy efficiency, and transportation electrification.

Response to Comment 46-2:

Staff will work closely with stakeholders when considering VOC reductions to ensure safe and effective alternatives exist.

Response to Comment 46-3:

Figure 10-10 footnote has been updated to state "and generation outside the Basin is not subject to SCAQMD regulatory authority". However, this table shows electricity usage and associated CO2 emissions, not generation.

Response to Comment 46-4:

Staff agrees that co-benefits can assist in generating criteria pollutant reductions while existing programs reduce GHGs and toxics. The Draft Plan includes measures such as ECC-01 and ECC-02 that take advantage of the co-benefits from other programs.

Response to Comment 46-5:

Staff is willing to discuss a possible SIP crediting mechanism for electric utilities with EPA if it can be shown how such as mechanism would incentivize reducing emissions, especially from the transportation sector.

Comment Letter from Los Angeles World Airports (Comment Letter #47)

Los Angeles World Airports

August 19, 2016

Michael Krause
SCAQMD Headquarters
21865 Copley Drive
Diamond Bar, CA 91765

Re: **Draft 2016 Air Quality Management Plan**

Dear Mr. Krause:

As you know, Los Angeles World Airports (LAWA) is the proprietary department of the City of Los Angeles that owns and operates Los Angeles International Airport (LAX), LA/Ontario International Airport (ONT), and Van Nuys general aviation airport (VNY). LAX is the seventh busiest airport in the world and third busiest in the United States. This letter identifies a number of issues that LAWA sees with the 2016 Draft AQMP, including:

- Current and forecast airport-related emissions in the 2016 Draft AQMP are not accurate and substantially understate the annual emissions that LAWA and other airports anticipate occurring through the horizon of this AQMP (2032).
- Aircraft emissions reductions predicted by the control scenarios due to the introduction of more aircraft meeting the International Civil Aviation Organization's (ICAO) latest aircraft engine emission standards will not materialize as expected. The large majority of aircraft that currently operate at LAX meet these standards, and thus, the expected reductions from the U.S. Environmental Protection Agency's (USEPA) adoption of ICAO's latest aircraft emission standards have already been achieved and are reflected in the emissions inventories that LAWA prepared and shared with the SCAQMD.

47-1

We appreciate the work of SCAQMD staff to address these discrepancies and other issues.

I. LAX Is an Important Regional Transportation Source and LAWA Has Taken Meaningful Steps to Reduce Emissions.

47-2

LAWA has long been a leader in airport sustainability and is committed to improving air quality at our facilities and across the region. Energy efficiency and air quality improvement programs are chief components of LAWA's sustainability policy, which was first adopted in 2008. Since then, LAWA has implemented a wide variety of programs designed to achieve reductions in energy consumption and improve air quality, including:

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- Energy efficiency projects, including LAX's new Central Utility Plant, which is a modern, energy efficient facility and is estimated to reduce operational GHG emissions by 6%;
- Voluntary purchase of green power from LADWP, which accounted for more than 10% of LAX's total power purchase in 2015;
- The LAX Solar Feasibility Study, which will identify sites on the LAX campus for the installation of solar photovoltaic power systems;
- LAWA's Clean Fleet Program, which is the nation's largest alternative-fuel airport fleet;
- LAX's Ground Support Equipment Emissions Reduction Policy, which requires airlines and other GSE operators to meet emissions targets through conversion or retirement of conventionally fueled equipment used to service aircraft;
- LAWA's Gate Electrification program, which provides electrical power and pre-conditioned air for parked aircraft to use instead of burning jet fuel – currently 100% of LAX's passenger gates are electrified and LAWA is working to expand electrification to aircraft parking spaces, maintenance hangars and cargo areas;
- LAWA's Clean Construction program, which is designed to reduce emissions from construction including mandating use of Tier IV diesel equipment, Model Year 2010+ haul trucks and other control measures;
- LAX FlyAway Bus Program, which provides ground transportation between LAX and multiple locations in the Los Angeles area;
- LAWA's award-winning Employee Rideshare program, which had a 23% participation rate in 2015 and saved more than 300,000 gallons of fuel; and
- LAX's Alternative Fuel Vehicle program, which requires shuttles, trucks, and other large commercial vehicles operating at the airport to be powered by alternative fuel.

47-3

LAWA is proud of the strong partnership forged with the SCAQMD, and appreciates the opportunity to actively participate in the process of developing the 2016 AQMP through the white paper working groups, the Control Strategy Forum, and the AQMP Advisory Group. In the spirit of mutual collaboration, LAWA offers the following comments on the 2016 Draft AQMP proposed programs and control measures:

II. Aircraft Emissions in the Draft 2016 AQMP Should Be Updated To Reflect Aircraft Inventories Provided by LAWA.

Although the text of the 2016 Draft AQMP indicates that aircraft inventories have been updated since the 2012 AQMP (page 3-6 last bullet), a comparison of the numbers shows that they are almost identical. In April 2015, LAWA provided SCAQMD staff as well as the Southern California Association of Governments (SCAG) more accurate 2012 aircraft inventories for the draft 2016 AQMP based on recorded flight landing and takeoff data at LAX, ONT, and VNY. The 2012 aircraft inventories in the 2016 Draft AQMP under-represent aircraft emissions in the basin and consequently may distort the impact of future control efforts. In addition, LAWA

47-4

provided airport, including aircraft, emission inventory forecasts for LAX (report dated September 2015), and for ONT and VNY (reports dated October 2015). The LAX and ONT forecasts were based on the 2016 RTP approved by SCAG. The 2016 AQMP should be updated to include the aircraft inventories provided by LAWA. 47-4 Con't

III. Estimated Emissions Reductions From Aircraft Should Be Clarified.

Throughout the 2016 Draft AQMP, SCAQMD calls for emission reductions from State and Federally controlled sources, generally referring to "Further Deployment of Cleaner Technologies." In Table 4-4 (page 4-29) reductions of aircraft NOx emissions are listed as 17 tons-per-day (tpd) in 2023 and 13 tpd in 2031. Yet, baseline inventories only have 15.6 tpd in 2023 and 17.09 tpd in 2031. While a footnote to Table 4-4 implies that emission reductions are undergoing review, it appears that the estimated NOx reductions from aircraft are inconsistent. Furthermore, it is unclear why there is a difference between Tables 4-4, 4-17, and 4-18. Table 4-17 (pages 4-61 and -62) identifies incentive funding needed to achieve emission reductions from aircraft, ocean-going vessels, and freight locomotives: $2.94 billion to achieve a 40 tpd reduction from these sources in 2023, and $1.47 billion to achieve another 20 tpd reduction by 2031. Another set of funding scenarios is provided in table 4-18. LAWA requests that SCAQMD clarify the targeted emission reductions from aircraft, understanding that LAWA does not have regulatory control over aircraft given federal preemption limitations. 47-5

IV. The 2016 Draft AQMP Overestimates NOx Emission Reductions from Aircraft.

The 2016 Draft AQMP appears to assume that emission controls for aircraft will reduce aircraft emissions by 76% to over 100% of Basin-wide aircraft emissions without providing any detail on how those reductions are being estimated. The reductions assumed are shown in Table 4-4 of the main document and Table 3 of Appendix IV-B (page IV-B-9). The assumed reductions actually exceed Basin-wide aircraft emissions in 2023. The proposed control measure: "Further Deployment of Cleaner Technologies: Off-Road Federal and International Sources" (page IV-B-57) implies that only ICAO's CAEP/8 compliant aircraft engines would be allowed in the South Coast. However, the large majority of engines assumed to operate on aircraft already comply with CAEP/8 NOx standards. Thus, the assumed emissions reductions, ranging from 76% to 100% of total Basin-wide aircraft emissions, appear to be greatly overestimated. 47-6

V. LAWA Supports the Creation of an Airport Working Group To Assess and Develop Control Measures for Other Airport Sources.

Control Measure MOB-04, as discussed in Appendix IV-A, pages IV-A-125 – 129, seeks to create a working group of airports, airlines, and other interested stakeholders to assess and develop mechanisms to reduce emissions from other airport sources. LAWA is proud of its many programs designed to reduce emissions from other airport sources as noted above. LAWA is eager to work with airlines, other airports, and interested stakeholders to find ways to 47-7

expand these programs to other airports and is interested in successful emission reduction programs in operation at other airports. While the 2016 Draft AQMP does not estimate emission reductions from this control measure, LAWA desires to work with the SCAQMD to develop ways to quantify the emissions benefits from existing and future emission control programs.

The 2016 Draft AQMP refers to emissions reductions from airport regulation of Taxis and Transportation Network Companies (TNCs) in Appendix IV-C and p. 133. Each municipality regulates Taxis differently. LAWA is not able to regulate Taxis at LAX and VNY as the City's Board of Taxicab Commissioners has exclusive jurisdiction over Taxis in the City of Los Angeles. Similarly, LAWA is not able to directly regulate TNCs as the California Public Utilities Commission has exclusive jurisdiction to regulate TNCs. Nevertheless, through the working group, LAWA is eager to explore voluntary and/or incentive based programs to encourage Taxis and TNCs to use clean vehicles at its airports.

47-7
Con't

LAWA looks forward to working with the SCAQMD and other stakeholders to explore opportunities for further emissions reductions at airports in the region and thanks the SCAQMD for the opportunity to comment on the 2016 Draft AQMP. We look forward to continued engagement in the public process and applaud the SCAQMD for its commitment to air quality improvement in the Basin.

Sincerely,

Lisa Trifiletti/TM

Lisa Trifiletti
Deputy Executive Director
Environmental Programs Group

LT:TM:eb

Z:\LETTERSANDMEMOS\LAWA Comment Letter - Draft 2016 Air Quality Management Plan

Responses to Comment Letter from Los Angeles World Airports (LAWA)
(Comment Letter #47)

Response to Comment 47-1:

Staff appreciates the commenter's participation in the development of the 2016 AQMP.

Response to Comment 47-2:

SCAQMD staff recognizes the energy efficiency and air quality improvement programs that have benefited and will continue to benefit the region.

Response to Comment 47-3:

Please see Response to Comment 47-2 regarding the implementation of energy efficiency programs.

Response to Comment 47-4:

The aircraft emissions inventory was updated using activity data provided by airport, FAA data and growth projection from SCAG in August 2016 and have been included in the Revised Draft 2016 AQMP.

Response to Comment 47-5:

There were errors in the reported emission reductions associated with aircraft for 2023. The projected emission reductions for 2023 has been updated for the Draft Final 2016 AQMP.

Relation to the difference in funding levels shown in Tables 4-17 and 4-18 (June 2016 release version), the Table 4-18 scenario called for greater emission reductions from locomotives and marine vessels. The targeted emission reductions from aircraft will be clarified in the State SIP Strategy portion of the 2016 AQMP.

Response to Comment 47-6:

Please see Response to Comment 47-5 with regard to NOx emission reductions from aircraft.

Response to Comment 47-7:

Staff appreciates the comments regarding LAWA's environmental programs and looks forward to working with LAWA and the other airport authorities, the airline industry, environmental and community organizations, and other interested stakeholders to identify actions that potentially result in additional emission reductions through the working group process.

The SCAQMD staff is aware that the City of Los Angeles Taxicab Commission has authority over taxicab service at LAX and would extend an invitation to the City's Department of Transportation staff to participate in the working group.

Comment Letter from Orange County Council of Governments (Comment Letter #48)

August 19, 2016

Dr. Philip Fine
Deputy Executive Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 92765

RE: Orange County Council of Governments (OCCOG) Comments: June 2016 Draft of the 2016 Air Quality Management Plan

Dear Dr. Fine:

The Orange County Council of Governments (OCCOG) appreciates the opportunity to provide comments on an initial, June 2016 Draft of the 2016 Air Quality Management Plan (AQMP). The Draft 2016 AQMP is a monumental effort and OCCOG recognizes that this Plan is critical to the region's ability to achieve federal air quality standards and healthful air. OCCOG has established an Ad Hoc Working Group comprised of member agencies representing local government, transportation agencies and the business community to collaboratively review and comment on the draft Plan.

The following general comments and recommendations are offered by OCCOG on the initial June 2016 Draft 2016 AQMP. OCCOG reserves the right to make further comments at a future date when the full impact of the proposed control strategy can be assessed:

1. Fragmented and Incomplete Document Release: OCCOG's review of this initial draft was conducted in the absence of critical, related documents which have yet to be released by the South Coast AQMD. Documents not yet released include the draft 2016 AQMP Program Environmental Impact Report and the AQMP's Socioeconomic Analysis.

   OCCOG finds it extremely difficult to grasp and conduct a comprehensive review and comment of the Plan, when only certain elements of the Plan have been released. At this time, the main part of the Draft 2016 AQMP, Appendices I, II, III, and IV A-C have been released, while the Modeling and Attainment Demonstrations Appendix, Compliance with Other Clean Air Act Requirements Appendix, the Socioeconomic Analysis, and the Program Environmental Impact Report have not yet been released for public review.

   Due to the lack of a complete document, OCCOG respectfully submits at this time, preliminary higher-order comments that will hopefully assist in AQMD's preparation of a revised September 2016 Draft Plan for review and comment. Please note that OCCOG reserves the right to make further refinements or revisions to these comments, in addition to submitting additional and final comments, when all 2016 Draft AQMP documents are released in a coordinated and integrated review process.

   OCCOG thus reserves the right to make further comments at a future date when the full impact of the document can be analyzed, and further recommends that the South Coast AQMD please consider releasing all elements of the Plan simultaneously.

48-1

Orange County Council of Governments
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2. Action Plan for Incentive Strategies: The Draft 2016 AQMP contains a number of measures that are designed to be implemented through incentives to accelerate the penetration of zero- and near-zero emission technologies, and to further reduce emissions from other mobile and stationary control measures. The Draft 2016 AQMP also notes that as much as $14 billion in funding needs to be identified in order to implement "incentive strategies".

   It is OCCOG's understanding that the $14 billion in funding need represents the total funding need of all the agencies responsible for implementing the proposed measures. OCCOG recommends that the incentive funding need for each proposed measure be detailed in the 2016 AQMP Plan and Appendices, particularly Table IV-A-1 and Table IV-A-2 in Appendix IV-A, and that funding need by agency also be summarized and presented. 48-2

   The Draft 2016 AQMP should include an action plan that identifies the funding source for all proposed incentive strategies. It should also include a discussion on the impact to local jurisdictions. For example, in regards to measures EEC-02 and EEC-03, there needs to be more details on who the recipient of the incentive is and who will be required to complete the bookkeeping and monitoring.

3. EGM-01: Emission Reduction from New Development and Redevelopment Projects: The purpose of this measure is to mitigate and reduce emissions from new development and redevelopment projects. The description of EGM-01 is very broad and could be interpreted to add a new fee to new development or redevelopment in the SCAQMD service area, similar to Rule 9510 adopted by the San Joaquin Valley Air Pollution Control District.

   As a coalition of local governments, this prospect concerns us absent more information on how a development fee might impact local land use under our authority. To the extent that such a control measure would redistribute or constrain growth in the region, it could undermine the GHG and pollutant emission reductions that are imbedded in the Regional Transportation Plan/Sustainable Communities Strategy that OCCOG worked diligently to complete with SCAG. A fee might not be the best way to insure that new structures accommodate clean technologies, and the District should also explore other cost/effective methods. 48-3

   Because of its ambiguity and potential overlap with the RTP/SCS, the OCCOG suggests that this proposed measure not be included among the AQMP's enforceable, committed measures. OCCOG further recommends that OCCOG be included in any South Coast AQMD Working Group that is established or re-convened on this measure, to allow for meaningful dialogue on this proposed measure. Further, if this measure proceeds to rule development in the future, the SCAQMD needs to assure that any proposed rule will integrate with, and enhance the California Environmental Quality Act (CEQA) process and not impede the project approval process in light of CEQA timelines.

4. Duplicative Measure: BCM-03: Further Emission Reduction from Paved Road Dust Sources: AQMD proposes that measure BCM-03 would include a review of existing NPDES mandates and that this be conducted in conjunction with any potential future rulemaking efforts. NPDES permits are administered by the local regional water quality control boards. AQMD does not have jurisdiction over the issuance and maintenance of mandates required of NPDES permits. OCCOG requests that AQMD staff remove reference to NPDES mandate review as to not confuse jurisdictional and implementation issues related to these permits. 48-4

Orange County Council of Governments
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5. Unquantified Measures: There are a number of measures that have not been quantified in the Draft 2016 AQMP. These are often referred to as "to-be-determined" or "TBD" measures. Based upon the review of the initial draft 2016 AQMP, it is OCCOG's understanding that the Plan is capable of achieving federal air quality standards in absence of any of the TBD measures. OCCOG raises a concern on whether it is appropriate to include these types of measures in the 2016 AQMP, since they do not advance attainment. Inclusion of TBD measures implies some level of commitment toward delivering those measures even though it has not been determined how many emission reductions they can provide, or at what cost. An economic analysis cannot be performed without the quantified benefits. OCCOG is concerned that inclusion of TBD measures in the AQMP could allow the District to substitute a TBD measure in place of other quantified and committed measures by the SCAQMD staff after the 2016 AQMP is approved. The OCCOG understands that in the future the TBD measures may prove to be more cost effective than other committed measures. This kind of transfer should not be implemented as an administrative change, and should only be pursued through an appropriate public process Until the time that either a backstop measure is needed or a TBD measure is identified to be more cost effective than one of the currently quantified measures, the OCCOG requests that the TBD measures either be removed from the plan, or clearly separated from the quantified measures, and called out as uncommitted measures that require further development and evaluation. 48-5

   Furthermore, should the TBD measures remain in the AQMP, the OCCOG requests that the 2016 AQMP include a discussion that clearly states the purpose for including these strategies and the process required to incorporate these strategies. This process would preferably include action by the SCAQMD Governing Board and opportunities for public review and comment.

Thank you again for the opportunity to provide input on this initial Draft 2016 AQMP. We appreciate your consideration of all the comments provided in this letter and we look forward to your responses. We hope that future releases of the Draft 2016 AQMP will be coordinated to include all appendices and supporting documents to ensure we all are afforded a comprehensive review. Please do not hesitate to contact me if you have any questions.

Sincerely,

Marnie O'Brien Primmer
Executive Director
Orange County Council of Governments

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Responses to Comment Letter from Orange County Council of Governments (OCCOG)
(Comment Letter #48)

Response to Comment 48-1:

Staff appreciates the interest and participation in the development of the 2016 AQMP. With regards to the timeline of the release of the Plan and related documents, please see Response to Comment 38-1.

Response to Comment 48-2:

The funding needs identified in the AQMP is based on meeting the emission reductions associated with the State Mobile Source Strategy "Further Deployment of Cleaner Technologies" measures for light-duty vehicles, on-road heavy-duty vehicles, federal and international sources, and off-road equipment. Tables 4-17 to 4-21 show a breakdown of potential funding by these sectors.

The deployment of cleaner technologies will be implemented by CARB, U.S. EPA, and the SCAQMD to incentivize cleaner vehicle and equipment. However, the specific implemented agency may depend on the source of funds or other factors.

For ECC-02, no additional costs are anticipated beyond those that would otherwise be allocated to reduce GHG emissions through State programs. This measure seeks merely to quantify criteria pollutant reductions from these GHG programs. ECC-03 is for existing residential buildings in the Basin and incentives are based on equipment, not the agency.

A Financial Incentive Funding Action Plan is being prepared to identify potential sources of funding. The Financial Incentive Funding Action Plan will be a companion document to the AQMP.

Response to Comment 48-3:

Under state law, the SCAQMD is required to assess rules and regulations adopted by other air agencies to ensure that all feasible measures are provided in the AQMP. As such, staff will be taking comments on whether adoption of a rule similar to San Joaquin Rule 9510 is appropriate for the South Coast Air Basin or whether there are other actions/mechanisms to address potential emissions associated with new or redevelopment projects. In addition, the facility-based measures will be developed in a public process and will initially seek enforceable actions to achieve emissions reductions. Please see Response to Comment 23-4 for details of the revised version of the facility-based measures in the Revised Draft Plan. Finally, staff encourages the Orange County Council of Governments to participate in the working group during the development of this measure.

Response to Comment 48-4:

Please see Response to Comment 6-2 with regard to NPDES requirements and clarification that staff did not intend the language to mean that SCAQMD would week to change NPDES permit requirements.

Response to Comment 48-5:

As mentioned in the Draft AQMP, the SCAQMD mobile source measures are proposed to help implement the State Mobile Source Strategy "Further Deployment of Cleaner Technologies" measures. The SCAQMD is identified as an implementing agency along with CARB and U.S. EPA. As such, many of the SCAQMD

mobile source measure do not have associated emission reductions since the reductions are provided in the State Strategy (see Appendix IV-B). Please see Response to Comment 7-5 for further discussion of TBD measures.

Comment Letter from Pacific Merchant Shipping Association (Comment Letter #49)

August 19, 2016

Wayne Nastri
South Coast Air Quality Management District
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Diamond Bar, California 91765

Submitted Electronically at:
http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/Draft2016AQMP

Comments on the Draft 2016 Air Quality Management Plan

Dear Mr. Nastri:

The Pacific Merchant Shipping Association (PMSA), on behalf of its member ocean carriers and marine terminals operating in the South Coast Air Basin and throughout California, submits the following comments regarding the South Coast Air Quality Management District's (SCAQMD) Draft 2016 Air Quality Management Plan (AQMP).

Over the past decade, the members of PMSA have significantly reduced emissions from cargo operations at the San Pedro Bay ports. In a cooperative approach with the ports of Long Beach and Los Angeles, PMSA members have invested billions of dollars in technology and infrastructure that has made the Clean Air Action Plan both a success and a model throughout the world. Since 2005, diesel particulate matter emissions have been cut over 80%, sulfur oxides by 97%, and nitrogen oxides by 50%. This achievement could have only been achieved through the cooperation fostered by the ports with ocean carriers and terminal operators. 49-1

Moreover, the cooperative approach established through the Clean Air Action Plan allows for significant emission reductions, even with the economic shock of the Great Recession, without harming the flow of cargo through the two ports that is the lifeblood of Southern California's economy. While our members have proved resilient that does not mean that poorly considered planning will not seriously harm the ports and the businesses and communities that rely on them. With that in mind, PMSA has two areas upon which it will focus its comments: incentive-based strategies and facility-based mobile source measures.

Pacific Merchant Shipping Association
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Incentive Funding Must Be Prioritized

Emission reduction strategies at the ports rely on expensive infrastructure improvements and significant levels of capital investment by the private sector. Over the past decade, PMSA members have spent billions modernizing terminals, installing infrastructure and upgrading vessels for shorepower, replacing cargo handling and terminal equipment, demonstrating new low-emission and zero-emission technologies, and improving efficiency. All of this has occurred despite significant losses of market share and lack of growth in container volumes.

While our members will continue investing in Southern California, the rate of improvement that the AQMP seeks is not sustainable without higher levels of container throughput long-term, and in the short-term cannot be achieved without incentive funding to accelerate turnover and invest in new technologies. Moreover, it is increasingly more difficult to reach the new goals when compared to the reductions that have already been achieved at great cost. A recent study conducted by Moffat & Nichol for PMSA estimates that terminal operators will invest roughly $7 billion in California-based marine terminal equipment, but would incur an additional $16-$28 billion in order to replace the current cleaner equipment with even cleaner zero and near-zero equipment. 49-2

That investment would be a challenge based on normal fleet turnover time frames. It is near impossible on the timeframe envisioned in the AQMP without significant incentive funding. And, a further challenge, it is estimated that ocean carriers will lose $5 billion this year due to historically low freight rates that are ravaging the industry. As a result, we urge SCAQMD to strengthen the use of incentive funding in the AQMP and identify specific funding needs, consistent with the Moffat & Nichol study, for maritime sources.

Given the importance of incentive funding to meeting the goals of the AQMP, the inclusion of any growth controls on the ports is exceptionally problematic. The inclusion of such measures puts in jeopardy the very ability for terminals and carriers to access the incentive funding necessary to achieve the AQMP's goals. While the ports have used programs like the Technology Advancement Program to spur new technologies for the maritime sector, those funds have been supplemented with other local, state, and federal funding. That funding is nearly always dependent on emission reductions being surplus over and above regulatory baselines. The inclusion in the AQMP of measures such as MOB-01 (discussed further below) will necessarily put that funding into jeopardy by calling into question whether future emission reductions are surplus.

If the goals of the AQMP cannot be achieved by 2024 and 2031 without significant incentive funding, but the very structure of the AQMP risks that incentive funding by being overly proscriptive, then the AQMP must be revised to ensure incentive funding will not be at risk in order to meet the region's goals.

Facility-based Mobile Source Measures Must Be Removed

The draft AQMP includes several facility-based mobile source strategies that go well beyond SCAQMD's authority. The inclusion of MOB-01, Emission Reductions at Commercial Marine Ports, in particular, attempts to establish SCAQMD control over mobile sources that are outside its jurisdiction. SCAQMD has no authority over mobile sources, particularly port-related sources. Port-related mobile sources are under the authority of the California Air Resources Board (CARB) and U.S. Environmental Protection Agency (US EPA). Further, SCAQMD does not have the authority to limit land use or growth as contemplated in MOB-01. In California, land-use decisions are the domain of local cities and counties. Local air districts do not, and should not, dictate to local governments how they may or may not choose to organize and plan their communities.

Over the course of the public process, SCAQMD staff has described the facility-based mobile source measures, including MOB-01, in varying, contradictory ways. During one AQMP Advisory meeting, staff described the collection of facility-based mobile source measures as not necessary to demonstrate attainment with the National Ambient Air Quality Standards (NAAQS), as evidenced by the lack of an emission reduction commitment. Later, during another AQMP Advisory meeting, SCAQMD staff described the facility-based mobile source measures as the local implementation of CARB's Mobile Source Strategy, specifically the "Further Deployment of Technology" measures. But, while CARB's Mobile Source Strategy does include a reference to SCAQMD's mobile source strategies, CARB's document states that the "further deployment measures will rely on expanded incentive funding programs to accelerate deployment, as well as advocacy for additional actions at the federal and international level, along with efforts to increase system efficiencies," and, significantly, it does not describe facility-based mobile source measures. As the recently-released California Sustainable Freight Action Plan specifically reiterates, "[t]here is no direction to implement a freight facility performance targets measure in either ARB's *Mobile Source Strategy* or *Proposed 2016 State Strategy for the State Implementation Plan*."[1] In any case, staff has not adequately described these measures and, given SCAQMD's clear lack of authority, staff must remove these measures from the final AQMP. 49-3

SCAQMD's inclusion of the facility-based mobile source measures in the AQMP threatens the vary basis of the success of the CAAP: voluntary cooperation among port stakeholders. The inclusion of these measures will cast a pall over the upcoming efforts at the ports. Both ports have recently announced an update to the CAAP in order to continue their successful efforts to improve air quality. In addition, the Port of Los Angeles recently announced a new effort, establishing the Sustainable Freight Advisory Committee, that seeks the support of port

[1] Sustainable Freight Action Plan, Appendix C, p. C-41, http://www.casustainablefreight.org/files/managed/Document/282/CSFAP_AppendixC_FINAL_07272016.pdf

stakeholders to accelerate the introduction of electric vehicles and equipment. Both the CAAP and Sustainable Freight efforts are founded on the principle that only through voluntary cooperation can the highest levels of investment and emissions reductions be reached. This essential cooperation will be jeopardized by the vague, unenforceable threat posed by the facility-based mobile source measures.

Despite the fact that there are no emission reductions are associated with the facility-based mobile source measures, SCAQMD chose to include these contentious measures in the AQMP. It makes no sense to include strategies that, based on SCAQMD staff statements, are not needed to demonstrate attainment with the NAAQS. The facility-based mobile source strategies do not further goals of the AQMP or State Implementation Plan. 49-3 Con't

For all of these reasons, SCAQMD must remove the facility-based mobile source measures from the AQMP. The inclusion of the facility-based mobile source measures will only serve to hamper the cooperation necessary to develop and deploy new technologies at our local ports. It will stifle the cooperation of port-related businesses, who will be rightfully concerned that their voluntary efforts would be transformed into command-and-control strictures that will limit their opportunity to grow and thrive. These measures will only ensure conflict among stakeholders which will ultimately prevent and impede progress.

Support National and International Standards

Finally, PMSA asks SCAQMD to continue its support for national and international standards for federal sources. Improving standards at these jurisdictional levels are necessary to achieve emission reductions at the ports and for allowing the long-term growth that will support our local communities and higher levels of investment in emissions reduction technologies. PMSA supports SCAQMD in efforts that seek to control emissions from the appropriate regulatory body, including the International Maritime Organization, US EPA, or CARB. 49-4

PMSA looks forward to working with South Coast Air Quality Management District on the next draft of the 2016 Air Quality Management Plan and its eventual finalization.

Sincerely,

Thomas Jelenić
Vice President

Responses to Comment Letter from Pacific Merchants Shipping Association (PMSA)
(Comment Letter #49)

Response to Comment 49-1:

Staff appreciates the comments submitted and applauds the commenter on the efforts to assist in successful air quality improvement programs at the Ports.

Response to Comment 49-2:

Staff appreciates the support of the incentive program and agrees that it is necessary for some sources to transition to cleaner technologies due to the high cost of new equipment. With respect to future funding mechanisms, staff intends to seek funds to implement the AQMP, so that such funds would not require reduction to be surplus to the 2016 AQMP.

Response to Comment 49-3:

The proposed measure MOB-01 is not intended to limit land use or growth. The primary objective of MOB-01 is to help achieve the emission reductions associated with the State Mobile Source Strategy "Further Deployment of Cleaner Technologies" measures for on-road heavy-duty vehicles, off-road equipment, and federal and international sources. The SCAQMD is listed as an implementing agency along with CARB and U.S. EPA. While the State has not been given direction to implement a freight facility performance targets measure at the State level, the SCAQMD is proposing facility-based measures that are within the SCAQMD authority to develop and implement. As noted earlier, these measures do not have associated emission reduction targets and seeks a collaborative approach to identifying actions that potentially result in emission reductions to help implement the State SIP Strategy “Further Deployment” measures. Such actions may be a combination of voluntary and regulatory actions. Regulatory actions may be adopted by local, state, or federal governments. This may include local ordinances that have quantifiable emission reductions.

Staff believes that the public process proposed in MOB-01 provides an opportunity for the SCAQMD staff to receive comments and input from all affected stakeholders including the Ports, goods movement industry, environmental and community organizations, and interested parties. The comments and input received will be used to develop mechanisms ensure the associated emission reductions will be maintained.

Response to Comment 49-4:

Staff appreciates the comment supporting national and international standards where appropriate. SCAQMD will continue to strongly support such standards.

Comment Letter from the Ports of Long Beach and Los Angeles (Comment Letter #50)

SAN PEDRO BAY PORTS
CLEAN AIR ACTION PLAN

August 19, 2016

Mr. Wayne Nastri
Acting Executive Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765
Electronic Submittal Via:
https://onbase-pub.aqmd.gov/sAppNet/UnityForm.aspx?key=UFSessionIDKey

Dear Mr. Nastri:

SUBJECT: COMMENTS ON THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT'S *DRAFT 2016 AIR QUALITY MANAGEMENT PLAN* (JUNE 2016)

The Ports of Long Beach and Los Angeles (Ports) appreciate the opportunity to participate in the South Coast Air Quality Management District's (District or SCAQMD) 2016 Air Quality Management Plan Advisory Committee and to comment on the *Draft 2016 Air Quality Management Plan* released on June 30, 2016 (AQMP). The Ports recognize the amount of effort that has gone into the development of the 2016 AQMP and acknowledge the efforts of the District to release a plan that seeks to balance "traditional" regulatory measures with innovative incentive-based measures.

The Ports support the development and implementation of programs to achieve the applicable and current national ambient air quality standards (NAAQS). Consistent with that effort, the Ports voluntarily developed the highly successful San Pedro Bay Ports Clean Air Action Plan (CAAP) and continue to be successful in implementing those programs. As a result of the CAAP, between 2005 and 2015, emissions from maritime goods movement sources were reduced at an accelerated rate over command and control rules; accounting for overall reductions of 84% for diesel particulate matter (DPM), 50% for nitrogen oxides, and 97% for sulfur oxides. The Ports' emissions inventories in 2015 show reductions that are in excess of the 2014 emission

50-1

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The San Pedro Bay Ports Clean Air Action Plan was developed with the participation and cooperation of the staff of the US Environmental Protection Agency, California Air Resources Board and the South Coast Air Quality Management District.

reduction goals in the CAAP. Thus, the Ports have a proven track record of developing and implementing appropriate and effective emission reduction strategies based on cooperative and voluntary measures, independent of or in advance of regulatory requirements. 50-1 Con't

The CAAP relies upon cooperative efforts with the maritime goods movement industry to achieve healthful air for the surrounding communities. The voluntary and cooperative aspects of the CAAP are critical because the Ports set stretch goals under incentive-based programs that rely in part upon federal, state and District monetary grants. Many of these grants are only available for programs that achieve "surplus" emissions reductions (i.e., those emissions reductions that are not required by regulation) by either accelerating the air quality regulatory agency requirements, or implementing non-regulatory programs. A significant concern of the Ports is the potential loss of this grant money, which is essential to continuing the successful implementation of the CAAP, if CAAP measures are included in the 2016 AQMP, directly or indirectly. 50-2

In order to meet the NAAQS, a collaborative and concerted effort with our agency partners is also essential, with the understanding that while the Ports can voluntarily achieve significant emission reductions, the CAAP is not a suitable control measure for the 2016 AQMP. United States Environmental Protection Agency (EPA), California Air Resources Board (CARB), and the District are the air quality regulatory agencies, and as such have authority as granted by statute to regulate the emissions directly from maritime goods movement sources. The Ports do not operate, own or control the maritime goods movement emission sources, and do not have the same authority as the air quality regulatory agencies. As such, the Ports should not be the agencies designated as responsible for achieving emission reductions from the maritime goods movement industry. 50-3

Additionally, the Ports are currently in the process of developing the next update of the CAAP. Many of the existing CAAP control strategies have been adopted or superseded by state or international requirements, such as the rules for replacing drayage trucks, switching to cleaner marine fuels, and using shore power while at berth. In collaboration with the maritime goods movement industry and our regulatory partners, the Ports seek to identify additional strategies to voluntarily achieve emissions reductions from ships, trucks, locomotives, cargo-handling equipment, and harbor craft to support the state's and region's air quality attainment needs. The CAAP Update will also incorporate strategies to address near-zero and zero emission technologies, greenhouse gas emissions, energy, and operational efficiencies. 50-4

In response to the District's request, the Ports respectfully submit the following comments regarding the Draft 2016 AQMP at this time, as well as questions and concerns that must be addressed *prior to* finalization and adoption of the 2016 AQMP by the District. We note, however, that it is difficult for the Ports to specify all comments at this time as the critical Appendices V and VI, Incentive Funding Action Plan, and 50-5

socioeconomic analysis have not yet been released to the public. We urge the District to consider extending the comment date on the 2016 AQMP until all Appendices and other critical components of the AQMP (e.g., the socioeconomic analysis, Incentive Funding Action Plan, etc.) have been released to the public so that a more comprehensive analysis can be conducted and comments provided to the District prior to Board consideration. Based on the information currently available, the Ports request that the Draft 2016 AQMP be revised as follows:

- Remove Mobile Source Control Measure MOB-01, as it does not provide emission reductions for the attainment demonstration, exceeds the District's authority, and is duplicative of other proposed control measures and state, federal and international laws. 50-6
- Exclude the Ports from the growth management control measure, EGM-01.
- Revise MOB-14 so that it does not preclude the maritime goods movement industry's ability to obtain grant funding.
- Focus on attaining the applicable NAAQS and not the revoked NAAQS.
- Specifically identify which measures are contingency measures as required by the Clean Air Act.
- Include in the socioeconomic analysis prepared for the 2016 AQMP a thorough cost-benefit evaluation of all control measures, including MOB-01 if it remains in the Plan as currently proposed, and all contingency measures.
- Complete and circulate the Incentive Funding Action plan for public review and comment *before* inclusion in the Socioeconomic analysis.
- Respond with changes in the 2016 AQMP to address the Ports' concerns and questions associated with the technical analysis, including the baseline and future year emissions inventory.

Detailed comments on each of the Ports' requested bullet items above are provided in the following Attachment.

The Ports strongly encourage the District to make the above-requested changes to the Draft 2016 AQMP, and in particular, eliminate control measure MOB-01 as it is unnecessary and exceeds the District's authority. The Ports also urge the District to complete the appropriate Incentive Funding Action Plan, as well as the appropriate socioeconomic impact analysis, and to provide the Ports and other members of the public with an adequate opportunity for comprehensive review and comment on those documents along with the (revised) Draft 2016 AQMP *prior to* submitting the Plan to the Board for consideration. 50-7

The Ports remain committed to achieving our clean air goals identified in the CAAP to help improve regional air quality. We strongly believe that the voluntary and cooperative CAAP process established by the Ports remains the most appropriate forum for the Ports and the air regulatory agencies to discuss technical and policy issues related to reducing emissions from port-related sources.

The Ports appreciate this opportunity to provide comments on the Draft 2016 AQMD. We look forward to continuing to work with the District on advancing our shared goals for clean air in the South Coast region.

Sincerely,

HEATHER A. TOMLEY
Director of Environmental Planning
Port of Long Beach

CHRISTOPHER CANNON
Director of Environmental Management
Port of Los Angeles

CC:LW:TD:mrx
APP No.: 160818-518

cc: Jon Slangerup, Port of Long Beach, Chief Executive Officer
Gene Seroka, City of Los Angeles Harbor Department, Executive Director
Richard Corey, California Air Resources Board, Executive Officer
Alexis Strauss, Region 9, Acting Regional Administrator

Attachment: Detailed Comments on the Ports' Requested DRAFT 2016 AQMP Revisions

Attachment to Comment Letter #50:

SAN PEDRO BAY PORTS

CLEAN AIR ACTION PLAN

ATTACHMENT

Detailed Comments on the Ports' Requested DRAFT 2016 AQMP Revisions

1. SCAQMD Mobile Source Control Measure: MOB-01 Emission Reductions at Commercial Marine Ports.

The Ports appreciate the discussion in this control measure that recognizes our successful efforts in implementing the CAAP since 2006 and exceeding our emission reduction goals in 2014. Yet, it appears that the District remains concerned over its ability to claim and quantify credit in the state implementation plan SIP for the emission reductions achieved by the Ports through the CAAP in the absence of District-imposed "enforceable" rules or control measures. The District continues to attempt to hold the Ports responsible for achieving their voluntary stretch goals, and for backstopping requirements that are currently being enforced by state and international regulations. Further, MOB-01 suggests that if the emission reductions occurring at the Ports are not maintained after they are reported into the SIP that this measure may be implemented in the form of a backstop regulation by the SCAQMD or by the State or federal government, or other enforceable mechanisms, notwithstanding the limitations of the federal Clean Air Act. 50-8

The District has previously proposed to address its need for enforceable measures by various other approaches, e.g., control measure MOB-03 in the 2007 AQMP and control measure IND-01 in the 2012 AQMP,which characterized the Ports as "indirect sources" of emissions.. The 2007 MOB-03 was described as "a backstop measure for indirect sources of emissions from ports and port-related facilities" and in the ensuing years, District staff proposed and sought public review of a 'backstop" rule that would be enforceable and applicable to the Ports, "Proposed Rule 4001." The Ports raised many questions and objections to control measure IND-01 and Proposed Rule 4001 in numerous comment letters[1] sent to the District and EPA. EPA, in its April 2016 action

[1] Comment Letters to U.S. Environmental Protection Agency dated November 19, 2015; California Air Resources Board dated March 25, 2014; South Coast Air Quality Management

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The San Pedro Bay Ports Clean Air Action Plan was developed with the participation and cooperation of the staff of the US Environmental Protection Agency, California Air Resources Board and the South Coast Air Quality Management District.

partially approving the 2012 SIP, excluded the commitments proposed by IND-01 from its action and stated that it would respond to that in a separate rulemaking. (See 81 FR 22025 (April 14, 2016) US EPA Partial Approval and Partial Disapproval of California Air Quality SIP.) The District has reported that Proposed Rule 4001 has been placed on hold, in light of work to develop supposedly different approaches for the pending 2016 AQMP.[2]

The Draft 2016 AQMP indicates, however, that the District has not abandoned those efforts to establish policies and control measures that may provide a framework or justification for the District to adopt rules or regulatory measures that may be applied to the Ports, either directly or as a backstop or contingency measures. The Draft AQMP introduces a new proposed control measure "MOB-01" which states: "The proposed measures will replace control measures MOB-03 in the 2007 AQMP and IND-01 in the 2012 AQMP." (Draft 2016 AQMP, p. 4-24.) MOB-01 is described as a control measure to achieve emission reductions at commercial marine ports and is characterized in the Draft AQMP as a "facility-based mobile source control measure." Although the nomenclature may have changed, the Ports believe that proposed new MOB-01 is no different from the District's previous Ports-related control measures, where the District invoked its purported authority to regulate the Ports as "indirect sources" of emissions. The Ports point to the Draft AQMP, which states that "mobile sources" currently contribute about 88% of the region's total NOx emissions. It then acknowledges that "[s]ince the SCAQMD has limited authority to regulate mobile sources, staff worked closely with the CARB and EPA, which have primary authority over mobile sources, to ensure mobile sources perform their fair share of pollution reduction responsibilities" (p. ES-7).

50-8 Con't

The Ports also note that in describing the MOB-01 control measure, the Draft 2016 Plan characterizes the Ports as a "facility-based mobile source." In addition to the troublesome wording of that characterization, the description of this proposed control

50-9

District dated January 15, 2014, January 31, 2014, October 2, 203, August 21, 2013, October 31, 2012, and August 30, 2012

[2] According to the minutes of the District's "Mobile Source Committee" meeting of April 15, 2016, included in the District's Board Meeting minutes from May 6, 2016 (agenda item #21), the U.S. EPA "in its recent decision on the approval of the 2012 AQMP did not evaluate IND-01 and will evaluate the control measure at some future date. Staff has been working on Proposed Rule 4001 to implement Control Measure IND-01 and has placed the rule development on hold with the development of the 2016 AQMP."

measure strongly indicates that the District intends to use MOB-01 as an indirect source control measure in order to quantify and lock in the emissions reductions achieved by the Ports under the CAAP. These "facility-based mobile source measure" approaches would have serious negative effects on maritime commerce and impede the State of California's freight competitiveness. Those burdensome and counter-productive approaches would be directly in conflict with the goals of Governor Brown's Executive Order to improve freight transportation efficiency and increase competitiveness of California's freight system, as well as the recently-released California Sustainable Freight Action Plan. The Ports continue to oppose any form of a "rule" that would impose SCAQMD oversight on the Ports and are strongly opposed to the District creating or relying on any concept of a "facility-based mobile source measure," whether described as an "Indirect Source Rule," "Backstop Rule" or the "freight hub," "facility cap," and/or "freight facility performance targets" approach. Neither EPA nor CARB can require the District to adopt a control measure for MOB-01 because indirect source control measures cannot be required as a condition of SIP approval. (42 U.S.C. § 7410(a)(5)(A)(ii); Health & Safety Code, § 40468.) Therefore, the Ports have serious concerns about the District making enforceable commitments to the state and federal governments that the Ports will control "indirect sources."

50-9 Con't

The District has not identified any legislation purporting to confer authority on the SCAQMD to regulate public marine facilities as "mobile sources."[3] The District itself acknowledges that it does not have "primary regulatory authority" over the Port (or other large facilities identified as major sources of emissions, e.g., rail yards, airports, and distribution centers). Nevertheless, the Draft AQMP further states: "This measure [MOB-01] may be implemented in the form of a regulation by the SCAQMD within its existing legal authority, or by the State or federal government, or other enforceable mechanisms." (p. 4-24.) This statement raises legal issues regarding the extent of the District's limited "existing legal authority;" the Ports have previously raised these issues in opposition to PR 4001. The Draft Plan is vague and ambiguous as to the source and extent of any specific "existing legal authority" that may be contemplated by the District or by MOB-01. The District has not previously cited any specific authority under the California Clean Air Act for this type of regulation (Cf., Health & Safety Code §§ 39000 et seq., and more specifically Chapter 5.5 (§§ 40400-40536) dealing with the SCAQMD).

50-10

[3] The EPA itself treats "facilities based" emission sources as distinct from "mobile sources". See, e.g., 66 FR 65208 "Database of sources of environmental releases of dioxin-like compounds in the U.S., ref year 1987-1995. December 18, 2001.

In fact, the District has no authority to regulate mobile sources or to draw any geographic boundary or to arbitrarily characterize source categories and declare those areas or groups of sources to be an "indirect source." "Mobile sources" of emissions are beyond the limited regulatory authority conferred by the Legislature on local or regional districts (e.g., Health & Safety Code § 40001(a); *also see*, 76 Ops. Cal. Atty. Gen. 11 (1993); 75 Ops. Cal. Atty. Gen. 256 (1992); 74 Ops. Cal. Atty. Gen. 196 (1991); 73 Ops. Cal. Atty. Gen. 229, 234-35 (1990)). Congress vested the federal government with the authority to set nationwide emissions standards for mobile sources, including non-road mobile engines and vehicles. (42 U.S.C. §§ 7521, 7547.) Congress expressly and impliedly preempted states from setting standards or other requirements relating to the control of emissions for mobile sources. (42 U.S.C. § 7543, (a) & (e).) The maritime goods movement emission sources are within the express and implied preemption. The Clean Air Act allows California to seek authorization from EPA to adopt "standards and other requirements related to the control of emissions" for some, but not all, mobile sources covered by MOB-01. (42 U.S.C. §§ 7543 (b) & (e)(2)(A).) Thus, District does not have mobile source regulatory authority.

50-10
Con't

The Clean Air Act defines an indirect source as "a facility, building, structure, installation, real property, road, or highway which attracts, or may attract, mobile sources of pollution." (42 U.S.C. § 7410(a)(5)(C).) An "indirect source review program" is "the facility-by-facility review of indirect sources of air pollution, including such measures as are necessary to assure, or assist in assuring, that a new or modified indirect source will not attract mobile sources of air pollution" that would contribute to the exceedance of the NAAQS. (42 U.S.C. § 7410(a)(5)(D)(i).) "Direct emissions sources or facilities at, within, or associated with, any indirect source shall not be deemed indirect sources for the purpose" of an indirect source review program. (42 U.S.C. § 7410(a)(5)(C).) Air pollution control districts are not statutorily authorized to impose a permit system on indirect sources. (*Friends of Oceano Dunes, Inc. v. San Luis Obispo County Air Pollution Control District* (2015) 235 Cal.App.4th 957, 964, as modified on denial of reh'g (Apr. 23, 2015).)

The control measures also fail as an indirect source review program because the businesses within the geographic and source designated areas are not a "new or modified indirect emissions source." (42 U.S.C. § 7410(A)(5).) A source is new if it adds to the air basin's existing emissions baseline. (*National Ass'n of Home Builders v. San Joaquin Valley Unified Air Pollution Control Dist.* (9th Cir. 2010) 627 F.3d 730, 731-32.) The Clean Air Act defines modification as "any physical change in, or change in the method of operation, of a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of an air pollutant not previously emitted." (42 U.S.C. § 7411(a)(4).)

Only those provisions necessary to meet the requirements of the Clean Air Act are included in the SIP. (Health & Safety Code, § 39602.) The purpose of an indirect source program is to ensure that mobile source emissions do not "cause or contribute to air pollution concentrations exceeding any national primary ambient air quality standard for a mobile-source related air pollutant." (42 U.S.C. § 7410(a)(5)(D)(i).) MOB-01 is not necessary to meet the NAAQS requirements of Clean Air Act. The emissions reductions listed in the Draft AQMP for MOB-1 for the years 2023 and 2031 are listed as "To Be Determined" -- which indicates that the reductions will be determined once the inventory and control approach are identified, and are not relied upon for attainment demonstration purposes. In reality, there would be little to no emission reduction benefit from indirect source measures because state, federal and international authorities have adopted rules and regulations to significantly reduce NOx emissions from these on- and off-road mobile sources. According to the 2016 AQMP, "[t]he effect of the rules and regulations are significant, showing reductions of over 67 percent in NOx emissions and close to 60 percent in VOC emissions between 2012 and 2023, even with increases in fleet population" (p.3-4).

50-10 Con't

MOB-01 further violates the dormant Commerce Clause by impeding the free and efficient flow of commerce by imposing a heavy burden on ports, the shipping industry, navigation and commerce without any local environmental benefit, or an insubstantial local benefit at best.

The Draft 2016 AQMP also inappropriately refers to the Ports as an "Implementing Agency," which the AQMP defines as "the agency(ies) responsible for implementing the control measure" (p. IV-A-20MOB-01 statesthat "[t]he Ports through its CAAP update can decide the most effective approaches to achieve the overall emission reductions targets" (p. IV-113). However,to the extent the AQMP singles out and mischaracterizes the Ports as "Implementing Agencies," without including all of the other public and private partners working to achieve emission reductions, it erroneously implies that the Ports would have an assigned enforcement obligation, and improperly shifts an unwarranted burden of regulatory implementation to the Ports. While the Ports have successfully adopted voluntary efforts to reduce emissions from maritime goods movement sources, the Ports are not air agency regulators. The Ports do not have the regulatory responsibility or authority to achieve emission reductions from sources over which they do not have jurisdiction, ownership or operational control. Further, the District is well aware from the Ports' previous comment letters on these issues, that generally the Ports lack authority to enforce as mandates the programs on all mobile sources operating in the Ports as they are preempted by state, federal and international law. This portion of the AQMP, requiring the Ports to select and implement the control measures, does not address or overcome these legal impediments.

50-11

The Ports respectfully remind the District that the CAAP is a planning document that provides guidance on strategies and targets that are ultimately implemented through individual actions adopted by each Port's respective Board of Harbor Commissioners (Boards). The State granted to the Cities of Long Beach and Los Angeles exclusive authority to implement the Tidelands Trust under the oversight of the State Lands Commission. Each city has been appointed as a trustee and has established their respective Board of Harbor Commissions with exclusive control and management of the Tidelands and revenues and expenditures from the Tidelands. However, such discretion must be exercised in accordance with their obligations to prudently manage Tidelands assets and revenues within a nexus and proportionality to the Tidelands Trust interest, as well as in accordance with applicable laws such as the California Environmental Quality Act (CEQA) and principles of federal preemption. The District cannot mandate action by each Port's Board of Harbor Commissioners, nor can the District direct how the Ports may be obligated to spend state Tidelands money; only the appointed trustee can make discretionary actions to obligate state Tidelands funds. Specifically, any measures listed in the AQMP or the CAAP must each require the Boards to authorize the expenditure of monies and program costs, or to approve conditions of infrastructure project development in their discretion as a CEQA lead agency and as Tidelands trustees.

50-11 Con't

Further, the District has not complied with the procedural requirements to adopt indirect source control rules that are contemplated in MOB-01. The requirements are: (1) ensure, to the extent feasible, and based upon the best available information, assumptions, and methodologies that are reviewed and adopted at a public hearing, that the proposed rule or regulation would require an indirect source to reduce vehicular emissions only to the extent that the district determines that the source contributes to air pollution by generating vehicle trips that would not otherwise occur; (2) ensure that, to the extent feasible, the proposed rule or regulation does not require an indirect source to reduce vehicular trips that are required to be reduced by other rules or regulations adopted for the same purpose; (3) take into account the feasibility of implementing the proposed rule or regulation; (4) consider the cost effectiveness of the proposed rule or regulation; (5) determine that the proposed rule or regulation would not place any requirement on public agencies or on indirect sources that would duplicate any requirement placed upon those public agencies or indirect sources as a result of another rule or regulation adopted pursuant to Health and Safety Code sections 40716 or 40717. (Health & Saf. Code, § 40717.5.)

50-12

Instead of MOB-01, the Ports suggest that a collaborative, voluntary approach, consistent with the cooperative partnership that has been proven to be successful over the past decade, will continue to be the most effective means for controlling emissions from maritime goods movement activities within the jurisdiction of Ports. This approach,

50-13

which could be memorialized under a cooperative agreement between the Ports and SCAQMD, CARB, and EPA, would benefit all parties because it continues the collaborative effort that has resulted in unprecedented emission reductions at the Ports, shares responsibility between Parties, provides more certainty for the local economy, avoids litigation, insures incentive funding that is tied to excess emissions will continue to be available, and will result in better air quality.

50-13 Con't

2. SCAQMD Growth Management Control Measure: EGM-01

The Draft 2016 AQMP states: "[f]or the purposes of this measure [EGM-01], indirect sources include all facilities not covered by another 2016 AQMP Control Measure. In addition, during the rule development process, additional indirect sources may be included or excluded" (p. IV-A-169).

The Ports should not be included within this control measure in the event MOB-01 is removed from the 2016 AQMP or during the rule development process. In addition to the reasons stated above in section 1, the Ports have serious concerns about the District making a commitment to the state and federal governments that the SCAQMD will control growth or dictate land use decisions. SCAQMD has no authority to control growth or overrule local land use decisions. (Health & Saf. Code, § 40716 [air districts cannot infringe on the existing authority of counties and cities to plan or control land use]; see also Health & Saf. Code, §§ 40000, 40414, 40440.1, 40717.5(c)(1).) Land use is within the exclusive preview of local cities and counties.

50-14

3. SCAQMD Mobile Source Control Measure: MOB-14 Emission Reductions from Incentive Programs

The Draft 2016 AQMP mobile source control measures include development of incentive funding programs and supporting infrastructure for early deployment of advanced control technologies. MOB-14 states that it seeks to develop a rule similar to the San Joaquin Valley Air Pollution Control District Rule 9610 – "State Implementation Plan Credit for Emission Reductions Generated through Incentive Programs" -- such that emissions reductions generated through incentive programs can be credited in the SIP emission inventories.

50-15

It will be critical to prioritize and secure the necessary funding needed to implement the proposed incentive-based measures in the Draft AQMP and achieve the aggressive emission reduction targets in the South Coast Air Basin. The Ports know first-hand that the move toward zero emissions is a costly endeavor and have placed significant emphasis on efforts to advance the development of near-zero and zero emissions equipment for on-terminal and on-road applications. Through the Ports' Technology

Advancement Program (TAP), we have been involved with funding the demonstration of clean technologies used in port operations for nearly a decade. Significant progress has been made and we expect that zero emissions operations will be feasible in the future. The scale of this effort will be significant, with cost for the equipment and fueling infrastructure in the *Billions* of dollars.

The Ports and the maritime goods movement industry will require a substantial amount of funding assistance from the local, state and federal agencies. As such, the Ports are supportive of incentive funding to accelerate advancement of technologies. The Ports continue to strongly support the implementation of funding programs such as the Proposition 1B Goods Movement Emission Reduction Program and the Carl Moyer Memorial Air Quality Attainment Program, both of which have provided funding for much needed assistance with upgrading wharves for shore power, the replacement of drayage trucks, and the replacement and repower of engines in cargo-handling equipment, harbor craft, and locomotives.

50-15 Con't

While the Ports support funding programs and the need to credit emissions reductions generated from through incentive funding programs, the Ports strongly recommend that MOB-14, or any resulting regulatory strategy be structured in such a way that does not preclude the maritime goods movement industry's ability to secure grant funding for early actions. For example, it is not clear from the description of MOB-14 whether facility emission caps or port backstop rules could effectively disqualify companies and agencies from received grants, because typically grants funds cannot be used for regulatory compliance. The Ports believe that this unintended consequence of a control measure like MOB-14 could significantly impede early equipment replacement and transition to zero emission technologies, and also severely affect the economic competitiveness of the maritime goods movement industry. In addition, if the required emission levels for attainment are not be met in the region, the Ports must not be held accountable for attaining emission reductions that are predicated on incentive funding if the funding does not come through at the necessary and appropriate levels.

4. Inclusion of Revoked NAAQS in the 2016 AQMP

The Draft 2016 AQMP includes updates to previous plans for the revoked 1-hour (120 ppb) and 1997 8-hour (80 ppb) ozone NAAQS (p. 4-1), rather than addressing the current and controlling ozone NAAQS. For example,, the Draft 2016 AQMP attainment strategy seeks to reduce NOx emissions sufficiently to meet the revoked 1-hour ozone NAAQS of 120 ppb by 2023 and the revoked 8-hour ozone NAAQS of 80 ppb by 2024, instead of focusing on achieving the applicable ozone NAAQS of 75 ppb by 2032. This approach is inappropriate and unnecessary.

50-16

While the SCAQMD is required to comply with the anti-backsliding provisions of the Clean Air Act [CAA sec 172(e)], which preclude the adoption of controls that are less stringent than existing controls applicable in the District, the 2012 AQMP does not contain any mandates akin to MOB-01 that are applicable to the Ports. Therefore, the removal of MOB-01 from the 2016 AQMP by the District would not be "backsliding" from any existing standards relied upon for attainment under the existing 2012 AQMP.

50-16 Con't

Furthermore, the proposed approach of targeting the revoked standards and their associated deadlines of 2023 and 2024, which are significantly earlier than the controlling deadline of 2032 in the current regulations, puts the region at unnecessary risk that contingency measures for ozone will be required in the three years leading up to the attainment date for the revoked NAAQS.

5. Contingency Measures

> The Draft 2016 AQMP states the following regarding contingency measures: "Some measures in the summary table are listed as "TBD" (to be determined) for emission inventory, emission reductions and/or cost control. The "TBD" measures are not relied upon to demonstrate attainment of the standards but have been included if potentially feasible for the integrated, comprehensive plan. "TBD" measures require future technical and/or cost assessments in order to better understand and quantify emissions from and cost impact to the anticipated affected sources for the measures. It may be determined at that time that the "TBD" measure is not feasible or cost-effective to adopt and implement, or if reductions can be achieved, those reductions would be submitted into the SIP. Thus, "TBD" measures are included in the Plan as needed for contingency or if there are any shortfalls in committed emission reductions" (p. IV-A-18).

50-17

The District needs to identify specifically which measures in the AQMP it intends to be "contingency measures." Referring to "TBD" measures does not provide sufficient identification because the measure language is not consistent with the measure being a contingency measure. The contingency measures should only be for the *applicable* NAAQS, and not for the revoked NAAQS attainment timeframes.

Further, EPA's March 6, 2015, rulemaking allows extreme nonattainment areas for ozone to develop and adopt contingency measures meeting the requirements of 182(e)(5) (black box) to satisfy the requirements for both attainment contingency measures in CAA sections 172(c)(9) and 182(c)(9). These enforceable commitments must obligate the state to submit the required contingency measures to the EPA no later

than three years before any applicable implementation date, in accordance with CAA section 182(e)(5). (See Federal Register, Vol. 80, No. 44, 12264 Friday, March 6, 2015.) Therefore, it is premature to submit contingency measures for 2032. As for reasonable further progress (RFP) contingency measures, these are only needed to provide the incremental shortage in emission reductions and last one year.

50-17 Con't

EPA is also continuing its long term policy that allows promulgated federal measures to be used as contingency measures as long as they provide emission reductions in the relevant years in excess of those needed for attainment or RFP. The 2016 AQMP needs to be revised to reflect these allowances that EPA has made for extreme nonattainment areas.

6. State and Federal Control Measures and Incentive Funding Strategy

The Draft AQMP includes additional control measures to reduce emissions from sources that are primarily under State and Federal jurisdiction, including on-road and off-road mobile sources. As stated, these reductions are needed to achieve the remaining emission reductions necessary for the Basin's attainment. The Draft AQMP identifies 107 tons of NOx reductions in 2023 and 97 tons of NOx reductions in 2031 to help the District meet attainment. Almost all of these reductions, however, are associated with the measures calling for "further deployment of cleaner technologies," which involve accelerating the development, demonstration, and deployment of cleaner engine technologies, in whole or in part through the use of incentive programs. Achieving these substantial emission reductions "is predicated on securing the amount of funding needed" to further deploy these cleaner technologies, according to the Draft AQMP.

50-18

The AQMP estimates an approximate range of $4 to $11 billion in funding over a 7 to 15 year period to achieve the projected NOx emissions reductions from mobile sources (p. 4-59). "The total funding needed ranges from $13 to $16 billion to achieve the NOx emission reductions associated with the State Mobile Source Strategy" (p. 4-62). "A total of $1.1 to $1.6 billion of stationary source incentive funding programs are proposed with projected cost-effectiveness levels in the same range as the mobile source incentives" (p. 4-66). The AQMP further states:

> "The amount of incentive funding needed is estimated to be approximately $11 – 14 billion in total funding over a seven to fifteen year period. Currently, the SCAQMD receives around $56 million per year in incentives funding to accelerate turnover of on- and off-road vehicles and equipment under SB1107, a portion of the state's Tire Fee, and AB923. AB 923 will sunset in 2024. In addition, the District has received close to $550 million in Proposition 1B funding. The last round of Proposition 1B will be ending in

> the next couple of years. The District has also received funding under the DERA program on a competitive basis. However, the amount of funding needed to achieve the NOx emission reductions associated with the "Further Deployment" measures proposed in the State Mobile Source Strategy and the 2016 AQMP will require on the order of $1 billion per year if funding is available beginning in 2017" (pp. ES-8 to 9).
> As such, the short-fall is significant.

50-18 Con't

Assuming $16 billion is a reasonable estimate – and the accuracy of that estimate is open to question – should the District fail to secure this funding, it may be forced to adopt the "contingency" measures specified in the Draft AQMP, of which MOB-01 may be is one. The Ports are concerned the District may not secure the necessary funding, which would likely necessitate the hasty adoption of such contingency measures without a comprehensive analysis of the impacts, or possible alternatives, and without robust public input.

In addition, the Draft AQMP acknowledges that achieving the emissions reductions from the 2016 AQMP incentive-based control measures for both mobile and stationary sources will require approximately $11 – $14 Billion in total funding. Given this significant funding level needed to attain the ozone NAAQS over the next seven to fifteen years, the Draft AQMP refers to "an action plan [that] will be developed as part of the AQMP public adoption process" to identify the necessary actions to secure new sources of funding to implement the AQMP (p. 4-66). However, the Draft AQMP provided insufficient details on what would be contained in such an Incentive Funding Action Plan.

50-19

Furthermore, at the District's Mobile Source Committee meeting of July 22, 2016, the AQMD staff presentation indicated that a draft of the Incentive Funding Action Plan is expected as part of 2016 AQMP adoption. However, District staff has informed the Ports that an Incentive Funding Plan will not be available until *after* the AQMP has been adopted. This is not acceptable. Without a review of the Incentive Funding Action Plan concurrent with the Draft AQMP, it is not known whether the Plan is viable (i.e., activities to secure additional funding or actions are not realized), and the risk of contingency measures being triggered cannot be evaluated.
For this reason, the Ports urge the District to fully analyze the Incentive Funding Action Plan, and all contingency measures now, and to release that analysis *prior to* the close of public comment so that the public can evaluate the adequacy of the District's strategy and comment on that strategy.

7. Socioeconomic Impact Analysis

The Draft 2016 AQMP indicates that there will be no analysis of contingency measures in the socioeconomic study. Also, it appears that several measures that do not have emissions reduction targets or other information will not be included in the socioeconomic analysis. This means there will be no comprehensive review of the impacts associated with implementation of all measures or the repercussions of the potential adoption of the "facility-based mobile source measures" discussed in the MOB-01 section above. 50-20

The Ports request a full socioeconomic analysis of all control measures, and that the socioeconomic analysis be completed and an adequate opportunity for public comment be provided *prior to* action on the Draft 2016 AQMP. 50-21

Furthermore, it appears that the socioeconomic study will only analyze the impacts associated with approximately $16 billion in government subsidies, not including the match funding that will be required from private operators. The Ports are concerned that this amount is substantially underestimated and ignores the private capital that will be necessary to purchase thousands of pieces of costly near-zero and zero emission equipment to be deployed at the ports and throughout the region. 50-22

Finally, the description of the anticipated socioeconomic study assumes that there will be no tax increases to fund these incentives; however, the Draft AQMP contradicts this assumption as it clearly states AQMD's intent to seek local and state ballot measures, which would include taxpayer funding (p. 4-68). 50-23

The socioeconomic analysis must include an analysis of the impacts on the private sector from having to invest in significant new capital costs associated with cleaner equipment, and it must include an analysis of the impact on taxpayers as a result of higher taxes. 50-24

8. Specific Technical Comments on the 2016 Draft AQMP

a. Appendix IV-A, Table IV-A-2 SCAQMD Proposed Mobile Source 8-Hour Ozone Measures, p. IV-A-4

The title of MOB-01 is inconsistent with the description of the control measure provided starting on page IV-A-109, which lists "CO" as a target pollutant. The control measure summary for MOB-01 (pp. IV-A-109-115) indicates that the goal of the measure is to seek emission reductions of NOx, SOx, and PM2.5. Please 50-25

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clarify if the measure is also intended to address emissions of CO, otherwise CO should be removed from Table IV-A-2 and updated accordingly. 50-25 Con't

In addition, for MOB-01, the emission reductions in tons per day (tpd) for 2023/2031 are identified as "TBD" with a corresponding footnote "b", which states "Submitted into the SIP as part of reporting or in baseline inventories for future AQMP/SIP Revisions." We request that the District provide further clarification on how the "Rate of Progress" will be calculated and compared to ensure that the emissions reductions achieved by the proposed control measure are surplus emissions. 50-26

b. Appendix IV-A, Emission Reductions at Commercial Marine Ports [All Pollutants], p. IV-A-109

The Ports each prepare annual air emissions inventories of port-related sources, and in July 2015, transmitted the San Pedro Bay Ports 2012 air emissions inventory, as well as forecasted port-related emissions for each year through 2031 for inclusion on the 2016 AQMP based on discussions with District and CARB staff.[4,5] It is not clear whether the emissions of NOx, SOx, and PM2.5 listed in the Control Measure Summary Table (p. IV-A-109) reflect the Port's actual emissions, as they do not correspond with those transmitted to the District and CARB. 50-27

It is the Ports' understanding that the emissions from port-related sources in the 2016 AQMP would reflect the actual emissions reported by the Ports. These discrepancies should be addressed.

To provide for a meaningful and comprehensive review, the Ports request that the District identify the port-related sources (i.e., ocean-going vessels, harbor craft, locomotives, cargo-handling equipment, and heavy-duty trucks) of emissions that make up the total emissions in the Control Measure Summary (p. IV-A-109). It is

[4] Email Communication, Subject: San Pedro Bay Ports 2012 Emissions Inventory. July 21, 2015. Allyson Teramoto (Port of Long Beach) to Henry Hogo, Joe Casmassi, Randall Pasek (AQMD); Nicole Dolney, Sylvia Vanderspek, Gabe Ruiz (CARB).

[5] Email Communication, Subject: 2016 AQMP Emissions Forecasting Dial +1 (312) 757-3121 Access Code: 299-388-957. August 9, 2016. Archana Agrawal (Starcrest Consulting Group, LLC) to Henry Hogo, Randall Pasek (AQMD); Nicole Dolney, Sylvia Vanderspek, Russel Furey, Vernon Hughes, Gabe Ruiz (CARB).

also important to identify the assumptions used to estimate future emissions in 2022, 2023, and 2031. For instance, it is important to understand the assumed International Maritime Organization (IMO) tier level of engines installed on ocean-going vessels calling at the Ports, as well as the fleet makeup of all other port-related source categories, including heavy-duty trucks, cargo-handling equipment, locomotives, and harbor craft. It is also important to identify the source-specific "growth" factors that were used to estimate future year emissions.

50-27 Con't

The **table** on the next page shows a comparison of the emissions provided in the Draft 2016 AQMP and the Ports' actual 2012 emissions and forecasted emissions for 2023 and 2031. As shown, there are several inconsistencies in the emissions inventories prepared by the Ports and the inventory used for the AQMP.

Annual Average	2012	2022	2023	2031
NOx (MOB-01 Draft 2016 AQMP)	39.37	TBD	42.39	35
NOx (2012 San Pedro Bay Ports Actual Emissions)	41.95	47.80	46.35	42.03
PM2.5 (MOB-01 Draft 2016 AQMP)	1.06	TBD	0.81	0.93
PM2.5 (2012 San Pedro Bay Ports Actual Emissions)	1.03	0.83	0.84	0.93
SOx (MOB-01 Draft 2016 AQMP)	4.04	TBD	1.23	1.47
SOx (2012 San Pedro Bay Ports Actual Emissions)	3.90	0.81	0.82	0.91

50-28

As previously mentioned, we request that the control costs associated with MOB-01 (and all other control measures) be quantified and included in the 2016 AQMP.

c. Appendix IV-A, Emission Reductions at Commercial Marine Ports [All Pollutants], CARB In-Use Fleet Rules. p. IV-A-112

It is stated in this paragraph that "The majority of marine vessel emissions are created by main propulsion engines, but auxiliary engines emissions are important, in part because they occur at dock in closer proximity to persons in and around the port" (p. IV-A-112). This statement is misleading in that the contribution of auxiliary engine emissions (excluding boiler emissions) to overall ocean-going vessel emissions (including transit, maneuvering, and hoteling at-berth) is often times nearly equivalent to or higher than main propulsion engines, which are only operational during transit and maneuvering.

50-29

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d. Appendix IV-A, Format of Control Measures, Emission Reductions. p. IV-A-19

This section states that: "During the rule development, the most current inventory will be used. However, for tracking rate-of-progress for the SIP emission reduction commitment, the approved AQMP inventory will be used. More specifically, emission reductions due to mandatory or voluntary, but enforceable actions shall be credited toward SIP obligations" (p. IV-A-19).
We request that any differences between the "most current inventory" used for rule development and the "approved AQMP inventory" be clearly described and addressed prior to any mandatory or voluntary emissions being credited toward SIP obligations.

50-30

e. Appendix IV-B, Tier 4 Vessel Standards. p. IV-B-50

Under this proposed action, CARB intends to work with the EPA, U.S. Coast Guard, and international partners to urge the International Maritime Organization (IMO) to adopt a Tier 4 NOx standard for new ocean-going vessels and efficiency requirements for existing vessels (p. IV-B-50).

The Ports support the advocacy for more stringent IMO standards and efficiency targets for ships. Currently, newly built ships are required to meet IMO Tier 3 standards for NOx. The Ports have developed an IMO Tier distribution forecast based on the existing world fleet, estimated future vessel calls at the Ports, and Tier 3 order information provided by the engine manufactures. The Ports' Tier distribution forecast indicates strongly that there will be no significant (less than 5%, best case scenario) Tier 3 penetration of the ship calls by 2023. Further, the forecast indicates that the existing world fleet (Tier 0-2) could service the Ports through the mid to late 2030s to 2040s.

50-31

Recognizing that Tier 3 fleet penetration will be significantly slower than CARB is estimating and coupled with the fact that there have been no discussions at IMO Marine Environmental Protection Committee related to a Tier 4 NOx engine standard, the Ports believe that it is highly inappropriate to assume aspirational reductions related to Tier 4 fleet penetration until the standard is at least drafted if not promulgated. Taking reductions for standards that are neither in discussion nor in development is not appropriate for SIP planning purposes. Therefore, the Ports request that the estimated emissions reductions associated with Tier 3 fleet penetration this measure be reconsidered for the proposed SIP commitment and that all reductions associated with Tier 4 be removed.

Furthermore, it is stated that: "The new standards would be allowed to enter the fleet using natural turnover and would not be accelerated by additional rules or incentives" (p. IV-B-51). While the Ports are in favor of CARB advocating for IMO Tier 4 NOx standards and efficiency targets for ships, we believe that effort should be placed on encouraging the cleanest ships to deploy to our ports now. There are currently fewer than 50 ships worldwide on order that will have IMO Tier 3 capabilities and it is unknown where they will be they deployed. We do not foresee a sizeable number of Tier 3 ships servicing our ports in the near term. As more of these ships become available for deployment, the Ports recommend the development of statewide strategies, such as incentive funding programs to attract these clean new ships to our Ports.

50-31 Con't

f. Appendix II, Chapter 2, PM10 Temporal Variation. p. II-2-57

The Ports are concerned that the narrative in this section misrepresents what is actually occurring at the Ports. In particular, we feel the following statement is misleading:

Moreover, higher port activity due to peak cargo traffic which typically occurs in the fall of each year coupled with the lower mixing height in the fall may also contribute to the higher PM10 concentrations during this time of year.

50-32

Actually, higher port activity generally occurs in the middle to late summer, however the shape of the peak has become less pronounced. And furthermore, historical data received at the Ports' Air Monitoring Stations indicates that PM10 concentrations near the Ports are no higher in the fall than any other time of the year. Since these findings do not support the assumption in the statement above, the Ports request that the statement above be removed from the document.

Responses to Comment Letter from Ports of Long Beach & Los Angeles (San Pedro Bay Ports) (Comment Letter #50)

Response to Comment 50-1:

Staff appreciates the support for the development and implementation of the 2016 AQMP. Staff also recognizes the hard work and commitment it was taken to successfully fulfill the voluntary Clean Air Action Plan (CAAP) that has benefited the region.

Response to Comment 50-2:

The intent of the proposed facility-based measures is not to interfere with critical funding and grant monies. Staff is proposing to work to ensure that opportunities for emission reductions are realized and accomplished.

Response to Comment 50-3:

Staff agrees that a collaborative effort is the best approach in establishing a successful program, particularly in light of various regulatory authorities and interests. In addition, staff recognizes some of the limitations faced by the Ports and their terminal operators. The SCAQMD does have authority to regulate indirect sources such as the ports. Staff encourages stakeholders and interested parties to participate in the development of the facility-based programs so all interests and needs are considered. With regard to SCAQMD's regulatory authority, see Response to Comment 96-4.

Response to Comment 50-4:

SCAQMD staff will need to review the updated CAAP to understand the goals set forth and to ensure that all available emission reduction opportunities are included. As such, the voluntary program under MOB-01 could be established based on the updated CAAP.

Response to Comment 50-5:

Please see Response to Comment 38-1 regarding the timing of the release of the Plan and related documents, as well as review periods for those documents. The draft Financial Incentive Funding Action Plan was released in December and the public is provided time for review and comment before Board consideration in February 2017.

Response to Comment 50-6:

Staff continues to see value in the facility-based measures, which has garnered support from other commenters, so they will remain in the proposed 2016 AQMP. However, staff does acknowledge concerns and seeks to resolve those concerns during the working group meetings. Please see Response to Comment 49-3 for further discussion of MOB-01.

Given the comments received on the various perspectives of the SCAQMD's legal authority during the public process in implementing the 2007 AQMP MOB-3 and the 2012 AQMP IND-01 measures, staff believes that a more constructive approach to achieving additional emission reductions in the near-term is through the actions the Ports are taking in the development of the Clean Air Action Plan (CAAP) update. If such actions are voluntary in nature and the associated emission reductions are proposed to be included

in the SIP, enforceable commitments must be made to ensure the reductions are surplus and permanent. The enforceable commitment may be in the form of a rule or other enforceable mechanisms. For responses relative to the need for and authority for measure MOB-01, see Responses to Comments 96-3, 96-4, 96-11, 96-13, 96-23, and 96-29.

To the extent that MOB-01 is developed to seek additional emission reductions on a separate track from EGM-01, the Ports will not be included under EGM-01. Please also see Response to Comment 96-32.

MOB-14 recognizes emission reductions associated with funding programs and does not preclude any entities from obtaining grant funding since the funding programs are voluntary. For more details on discussion of MOB-14, see Responses to Comments 96-39 and 96-40.

The 2016 AQMP does focus on attaining the NAAQS but as described in Chapter 6, there are anti-backsliding requirements associated with revoked standards, including emission reduction commitments. Also see Response to Comment 96-7.

For a discussion of Clean Air Act contingency measures, see Chapter 4 of the AQMP and Response to Comment 96-42.

The Socioeconomic Assessment evaluates the cost impacts from both the stationary and mobile source strategies. Since MOB-01 is seeking additional emission reductions to help meet the State Strategy "Further Deployment of Cleaner Technologies" measures, the assumptions for the "Further Deployment" measures have been included. For the issue of socioeconomic analysis of MOB-01 and other facility-based measures, see Responses to Comments 50-20 through 50-24.

For a discussion of the incentive funding plan, see Responses to Comments 50-18 and 50-19.

The emission inventories will be updated to reflect the Ports emissions inventory with concurrence from CARB. More details regarding the emissions inventory can be found in Responses to Comments 50-27 through 50-30.

Response to Comment 50-7:

Please see Response to Comment 50-6 relative to the commenter's requested changes.

Control measure MOB-01 does not exceed the District's authority. See responses to Comments 96-3 and 96-4 for a more detailed discussion.

Please see Responses to Comments 50-5 and 50-19 regarding the Financial Incentive Funding Action Plan. Staff again appreciates the Ports past efforts in cleaning the air and looks forward to collaborating on future emission reduction efforts.

Please see Response to Comment 38-1 regarding the timing of the release of the Plan and related documents, as well as review periods for those documents. The draft Financial Incentive Funding Action Plan was released in December and the public is provided time for review and comment before Board consideration in February 2017.

Response to Comment 50-8:

Staff is proposing that the 2007 AQMP Measure MOB-03 and 2012 AQMP Measure IND-01 be replaced since the emission reductions associated with the two measures have already been achieved or are projected to be achieved. As such, the 2016 AQMP Measure MOB-01's intent is to help achieve a portion of the emission reductions associated with the State SIP Strategy "Further Deployment" measures. Please see Responses to Comments 96-2 and 96-3 for more details. Also, see Response to Comment 96-4 regarding the SCAQMD's regulatory authority.

Response to Comment 50-9:

With regard to the issue that neither CARB nor EPA may require the SCAQMD to adopt an indirect source rule, see Response to Comment 96-36. With regard to the assertion that measure MOB-01 would conflict with state goals to improve transportation efficiency and sustainable freight, staff disagrees. Both these goals are complementary to achieving clean air goals since they seek to reduce fuel consumption and reduce the amount of work required to move freight. Measure MOB-01 will seek to take advantage of improvements such as these that improve air quality.

Response to Comment 50-10:

With regard to SCAQMD's authority, see Responses to Comments 96-4 and 96-33. With regard to the claim that SCAQMD is attempting to regulate mobile sources in a manner prohibited by the Clean Air Act, See Response to Comment 96-11. The SCAQMD is not proposing any permit system for indirect sources. With regard to the argument that indirect source measures may only apply to new or modified sources, see Response to Comment 96-12. With regard to the argument that the facility-based measures are not necessary, see Responses to Comments 96-11 and 96-29.

Response to Comment 50-11:

With regard to identifying the Ports as "implementing agencies," see Response 96-20. With regard to the Ports' claim that they lack any authority to impose requirements on their tenants, see Response 96-16. With regard to the argument that reducing air pollution will violate the Tidelands Trust, see Responses to Comments 96-27 and 96-28.

Response to Comment 50-12:

SCAQMD will comply with Health and Safety Code §40717.5 when and if it adopts an indirect source rule. The statute applies when the agency adopts or amends a rule, not when it adopts an AQMP. See Response to Comment 96-10.

Response to Comment 50-13:

Proposed Measure MOB-01 is proposing a collaborative approach to identify actions that potentially result in emission reductions and may result in the development of enforceable mechanisms such as a cooperative agreement that the commenter is suggesting. Also, see Responses to Comments 96-2 and 96-3 regarding MOB-01.

Response to Comment 50-14:

With regard to the Ports' request to be excluded from measure EGM-01, see Response to Comment 96-32. It should be noted that measure EGM-01 does not seek to plan or control land use, establish zoning

requirements, or specify what land uses a city may allow in a given area. It would only seek to reduce emissions from indirect sources, which is clearly within SCAQMD's authority. See Response to Comment 96-4.

Response to Comment 50-15:

Please see Responses to Comments 96-38 and 96-39.

Response to Comment 50-16:

See Response to Comment 96-7.

Response to Comment 50-17:

With regard to contingency measures, see Chapter 4 of the AQMP and Response to Comment 96-42.

Response to Comment 50-18:

The emission reductions associated with the State SIP Strategy mobile source measures are commitments that CARB has made to achieve in order for the region to attain federal air quality standards by their applicable dates. CARB has indicated that they plan to provide additional discussion on actions to be taken to make up for any emissions reduction shortfall (this includes having sufficient incentives funding) in meeting the state's emission reduction commitments. Any actions that CARB proposes will be vetted through a public process. See also Response to Comment 50-17.

Response to Comment 50-19:

A Draft Financial Incentives Funding Action Plan was released on December 16, 2016 for a 30-day written comment period. In addition, the funding levels that are being sought have been analyzed as part of the socioeconomic analysis released in December 2016 for public comments.

Response to Comment 50-20:

The Draft Socioeconomic Report quantifies costs for control measures with quantified emission reductions only. The costs and emission reductions were analyzed for contingency measures BCM-01 (Further Emission Reductions from commercial cooking) and BCM-04 (Manure Management strategies). As stated in Chapter 4 of the Draft Final 2016 AQMP and reiterated in Appendix 2-A of the Draft Socioeconomic Report, the "facility-based" SCAQMD mobile source measures—MOB-01, MOB-02, and MOB-03—are being proposed to facilitate local implementation of the state's State Implementation Plan (SIP) Strategy "Further Deployment of Cleaner Technologies" measures. The SCAQMD measures propose a process to also identify voluntary actions that could potentially result in additional NOx emission reductions beyond the state's emission reduction commitments. Since these actions are not specifically identified at this time and may be voluntary in nature, staff does not presume that the affected industries and businesses would voluntarily incur any costs in addition to what has been quantified for CARB's "Further Deployment" measures.

Response to Comment 50-21:

The Draft Socioeconomic Report was released on November 19, 2016, with an additional public review and comment period of 30 days that ended on December 19, 2016. The Preliminary Draft Socioeconomic Report was released on August 31, 2016 with a comment period of 60 days. The preliminary draft covered the estimates of costs and benefits of the plan and were released earlier to maximize the review time for public and stakeholders. See Response to Comment 50-20 regarding the request to include all control measures in the socio-economic analysis.

Response to Comment 50-22:

The Draft Socioeconomic Report analyzes macroeconomic impacts associated with the total incremental cost of implementing the Draft 2016 AQMP. The total incremental cost includes matching funds required from affected businesses and consumers to purchase and maintain near-zero and zero emission equipment as well as different levels of government incentive funding. Please see Chapter 2 of the Draft Socioeconomic Report for more details on incremental costs.

Response to Comment 50-23:

The Draft Financial Incentives Action Plan for the 2016 AQMP, released in December 2016, provides a set of proposed actions that will be taken by the SCAQMD along with public and private sector stakeholders and the public at large to secure additional financial incentive funding. This includes estimates of potential revenues from each source. Taxpayer funding from local and state ballot measures represents a potential funding source outlined in the Plan. To be conservative about the prospect of securing additional public revenue from new sources, the Draft Socioeconomic Report has analyzed a worst-case scenario under which all incentive funding is assumed to be financed from existing state revenues with no health benefits included. This worst-case scenario is expected to have minimal impact on projected job growth in the region.

Response to Comment 50-24:

Please see Responses to Comments 50-22 and 50-23.

Response to Comment 50-25:

The reference to “CO” has been corrected in the Draft Final 2016 AQMP released in December 2016.

Response to Comment 50-26:

Please see Response to Comment 96-54.

Response to Comment 50-27:

Please see Response to Comment 96-56.

Response to Comment 50-28:

Please see Response to Comment 96-56.

Response to Comment 50-29:

The comment has been noted and discussion on auxiliary engine emissions has been revised (see Draft Final 2016 AQMP Appendix IV-A, page IV-A-129).

Response to Comment 50-30:

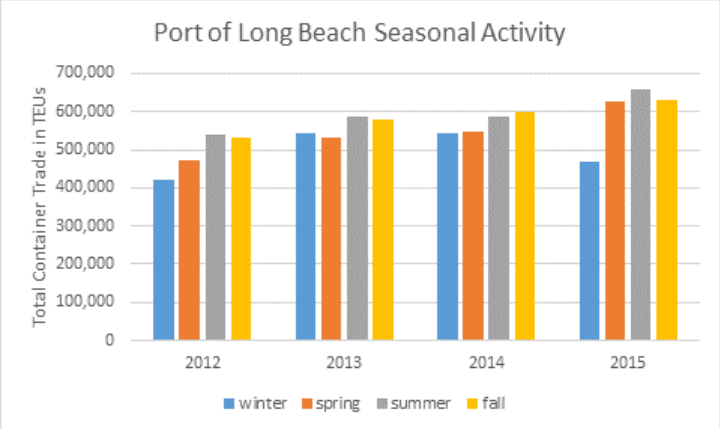
As implementation of MOB-01 moves forward, the most current emissions inventories will be used in developing potential emission reductions from the identified actions. For SIP accounting and reporting purposes, the percent change in emissions will be based on actual emissions reported by the ports and the historic base year (2012) will be used to calculate rate-of-progress.

Response to Comment 50-31:

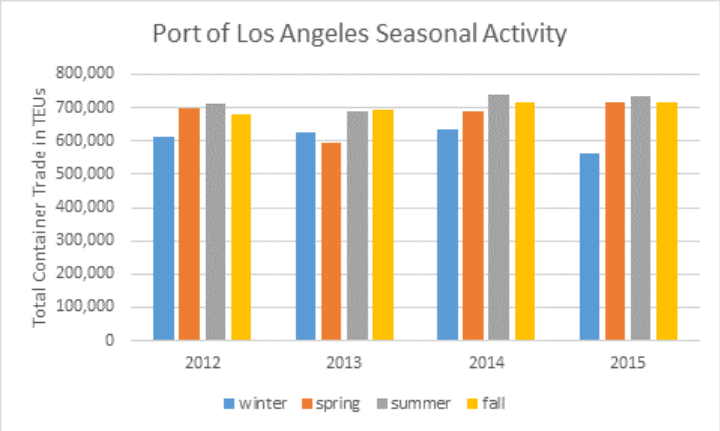
Staff appreciates the efforts the ports are making to incentivize deployment of the cleanest ocean-going vessels entering the ports. The future year estimates of the number of Tier 3 vessels provided by the ports are being considered by CARB in its update to the ocean-going vessel emissions inventory. While it is important to reflect the most accurate emissions inventory, it is also important to propose the development of cleaner emission standards and reflect the potential emission reductions associated with implementation of such standards. Any emission reductions associated with such standards are commitments that CARB has made. If no Tier 4 standards are established by IMO, CARB has committed to achieving the associated emission reductions nevertheless.

Response to Comment 50-32:

As noted in the comment, the monthly PM10 near the coast has relatively low variability throughout the year, with less than 8 µg/m^3 between the lowest and highest monthly averages as shown in Figure 2-39. The inland stations are relatively higher from June through October. Also, as noted in the comment, it does appear likely that monthly cargo traffic counts have become more consistent in recent years. The seasonal activity at the Ports of Long Beach and Los Angeles, as illustrated in the plots below using data from the POLB/LA website, generally peaked in the summer season between 2012 and 2015, with the fall months typically second. Each of the ports did have activity peaks in the fall for one of the years shown. Nonetheless, it is likely that lower mixing heights associated with cooling fall temperatures and the increase in offshore Santa Ana wind events in the fall months are likely more significant to the PM10 monthly variability that the differences and activities associated.



(Data Source: Port of Long Beach: http://www.polb.com/economics/stats/teus_archive.asp)



(Data Source: Port of Los Angeles: https://www.portoflosangeles.org/maritime/stats.asp)

Comment Letter from RadTech (Comment Letter #51)

August 19, 2016

Mr. Philip Fine
Deputy Executive Officer, SCAQMD
21865 Copley Drive
Diamond Bar, CA 91765

Re: Public Comments on the Draft 2016 Air Quality Management Plan

Dear Mr. Fine:

RadTech is pleased to submit public comments on behalf of our over 800 members, regarding the Draft 2016 Air Quality Management Plan. RadTech is honored to have been selected to serve on the Air Quality Management Plan (AQMP) advisory committee and in that capacity have commented on many of the proposals brought forth by staff. The plan's focus on incentives based approaches fits well with UV/EB/LED technology and can help the district achieve its air quality goals without sacrificing the economy. In addition to reductions in Volatile Organic Compounds (VOCs) that go above and beyond current limits specified in the District's source specific rules, UV/EB/LED technology can produce co-benefits such as reduction in combustion contaminants (PM 2.5, NOx, Greenhouse Gases) that would normally be generated by add-on control devices. Some additional thoughts follow:

Control Strategy and Implementation (Page 4-4)

We request that an analysis of UV/EB/LED technology be included in the plan, similar to that included for Solar Energy Technology. This would go a long way to inform businesses of their compliance options and fit well with the district's goal of increasing public outreach. The District's 2003 plan (Chapter 4, page 4-55) included a detailed discussion of energy curable technology which is missing from the current draft. The specific language follows for quick reference: 51-1

"Radiation-Curing Technologies Radiation-curing products are liquids with low viscosity that are 100 percent solids. The main difference between traditional solvent-based products and radiation-curing products is the curing mechanism. Radiation-curing products do not dry in the sense of losing solvents to the atmosphere as is the case with solvent-based products. Instead, when radiation-curing products are exposed to radiation, a polymerization reaction starts which converts the liquid to a hard, tough, cured solid film in a fraction of a second. This process typically results in significantly lower VOC emissions compared to solvent-based products. The most common radiations used to cure the products are ultraviolet light (UV) and electron beam (EB). The UV-curing products need a chemical called photoinitiator, which initiates the polymerization (curing) process when exposed to UV light.

The EB-cured products do not contain photoinitiators and are cured when the electrons generated with the EB equipment react directly with monomers and polymers in the liquid product. Due to almost instant curing of these products, the concept of drying time is eliminated which allows any post-application operation to commence immediately or in-line. Other advantages include the attainment of very high gloss levels, reduction of VOC emissions and solvent odors, and reduced energy consumption. UV and EB-curing products can be used on virtually all substrates, from metal and wood to glass and plastic. Applications of UV and EB-curing products are numerous and proliferating rapidly. Examples include: paper, furniture, automotive components, no-wax flooring, credit cards, packaging, lottery tickets, golf balls, eye glass lenses, CDs, baseball bats, beer cans and hundred of other items. However, these technologies have registered significant progress toward alleviating previous limitations in technology for field applications. UV applications are also making headway in automotive field repair, and efforts are underway for applying this technology for aerospace and military field uses."

51-1 Con't

We strongly urge the district to include the above analysis it in the 2016 plan. Additionally, since the 2003 document was authored, LED technology has become more prevalent in our industry. We request that the language be modified to UV/EB/LED.

ECC-01 - Co-Benefit Emission Reductions from GHG Programs, Policies and Incentives [All Pollutants] (Page 4-12)

51-2

Add-on controls which are combustion sources that emit Green House Gases (GHGS) and are typically sources of criteria pollutants, UV/EB/LED technology does not generate GHGs. We support the concept of "promoting implementation and development of new technologies" and evaluating them for "reduction of emissions of both GHGs and criteria pollutants."

ECC-03 - Additional Enhancements in Building Energy Efficiency and Smart Grid Technology [NOx, VOC] (Page 4-14)

51-3

This control measure appears to be limited to incentive programs for existing residences that includes weatherization, upgrading older appliances with highly efficient technologies and renewable energy sources to reduce energy use for water heating, lighting, cooking and other large residential energy sources. UV/EB/LED technology works at ambient temperature and is good for temperature sensitive substrates like paper, wood, and some plastics. The "low bake" concept is aimed to reduce the cure temperatures and yields energy savings. There are now other 100% solids ambient curable technologies but UV/EB/visible cure remains to be the only viable single component, ambient, on demand cure technology today. We urge the district to extend the incentives to commercial buildings where stationary sources may be operating.

FLX-01 Improved Education and Public Outreach (Page 4-16)

We appreciate the inclusion of "super-compliant" coatings, which would include UV/EB/LED products, in this section. 51-4

FLX-02 Stationary Source VOC Incentives (Page 4-19)

We are supportive of the incentives concept for facilities who utilize equipment which result in cost effective emission reductions that are beyond existing requirements. However, instead of imposing permit conditions, relaxing permitting requirements, in the form of 219 exemptions, would be a better r incentive for facilities to voluntarily convert to lower emitting processes. 51-5

Clean Air Investment and Cleanup Fund (Page 4-66)

RadTech commends the district for considering the creation of a national clean air investment fund for contaminated air. Stationary sources who reduce their emissions above and beyond existing district rule requirements, should be eligible to access funds in order to invest in technologies such as UV/EB/LED. 51-6

Appendix IV-A-29

The district has identified various negative impacts associated with the use of control equipment such as: "the potential to create secondary adverse air quality impacts"……increased ammonia emissions" and, since ammonia is a precursor to particulate formation, increased particulate emissions. The district has further found that "in the event of an accidental release of ammonia, sensitive receptors in the vicinity of the release may be exposed to harmful concentrations of ammonia vapor." These statements further validate the environmental viability of reformulation to UV/EB/LED technology and make a case for the district to encourage the use of said technology. We urge recognition of the technology for the category of "Commercial Natural Gas External Combustion-Other" as conversion to UV/EB processes can eliminate the need for add-on control devices that use natural gas and generate combustion contaminants. 51-7

Appendix IV-A-43

We urge inclusion of UV/EB/LED technology as a strategy that reduces emissions, improves energy efficiency, reduces fuel and creates new job opportunity. It is not clear whether or not emissions from afterburners and similar combustion control devices have been included in the analysis. 51-8

Appendix IV-A-46

RadTech concurs with the district's statement that "…incentivizing the use of much cleaner, less polluting, products and equipment will require additional efforts to broaden the scope of stationary source incentives." We urge the district to consider Board Member Judy Mitchell's comment to staff to provide an exemption for UV/EB processes from permitting requirements under Rule 219. 51-9

Appendix IV-A-47

We commend the district for including the provision of incentives for existing businesses to implement zero and near-zero emission technologies and encouraging new businesses that use and/or manufacture near-zero and zero emission technologies to site in the Basin. Users of UV/EB/LED technology should have access to the incentives. 51-10

Appendix IV-A-48

We urge the inclusion of permitting exemptions in the "Permitting and Fee Incentives and Enhancements" section. As it currently stands, this section only mentions the expansion of the certification program but does not mention permit exemptions for equipment that goes above and beyond rule requirements such as UV/EB. We support the "Branding Incentives" and the "Recordkeeping and Reporting Incentives". 51-11

Appendix IV-A-50

It is unclear whether or not the "Incinerators" category in Table 1, includes emissions from add-on control devices. 51-12

Appendix IV-A-85

UV/EB/LED technology can play a role in the market sectors (Rule 1106, Rule 1124, Rule 1128, Rule 1107) mentioned on this page. The technology can create the "win-win business case" the section contemplates. 51-13

Appendix IV-A-86

Please refer to comment on Control Strategy and Implementation (Page 4-4), above.

Appendix IV-A-99

We support the district's efforts to improve education and public outreach. To this end, including industry resources on the district's website (such as a link to the RadTech webpage) would be beneficial to business owners who seek near-zero or zero technologies. 51-14

Appendix IV-A-100

We support outreach programs for consumers to increase awareness of the benefits of purchasing low emitting products and encourage the district to extend the sane outreach to business owners who may be looking for compliance options.

Appendix IV-A-103

We agree with incentivizing lower polluting and less toxic alternative processes and materials for industrial modernization. UV/EB/LED processes can help the district achieve this goal. 51-15

Appendix IV-A-104

UV/EB/LED processes should be eligible for any funding provided through the mechanisms outlined in this section.

Appendix IV-A-105

We urge the inclusion of permitting exemptions in the "Permitting and Fee Incentives and Enhancements" section. As it currently stands, this section only mentions the expansion of the certification program but does not mention permit exemptions for equipment that goes above and beyond rule requirements such as UV/EB. 51-16

Appendix IV-A-106

Please refer to comment on Control Strategy and Implementation (Page 4-4), above.

We appreciate the opportunity to work with you and your staff. Please do not hesitate to contact me at 909-240-0866 or via email: rita@radtech.org.

Regards,

Rita M. Loof
Director Regional Environmental Affairs

Responses to Comment Letter from RadTech
(Comment Letter #51)

Response to Comment 51-1:

A description of energy curable technology is now included in Appendix IV A to inform businesses of a compliance option.

Response to Comment 51-2:

Control measure ECC-01 includes the concept of promoting implementation of new technologies that reduce both GHG and criteria pollutant emissions. Incentives, programs, and partnerships will be evaluated for reduction of emissions of both GHGs and criteria pollutants. As facilities seek to reduce GHG emissions by adopting lower-GHG technologies such as UV/EB/LED, the criteria pollutant benefits will be analyzed.

Response to Comment 51-3:

ECC-03 is aimed at implementing efficiency improvements at residential buildings. Combustion sources at residential buildings, including stoves, heaters, fireplaces, etc., would be targeted to reduce NOx emissions. As UV/EB/LED technology is designed for manufacturing applications, it is not appropriate to include these technologies when seeking emission reductions at residential buildings. Process efficiencies for commercial buildings are covered within other control measures.

Response to Comment 51-4:

Your support is acknowledged.

Response to Comment 51-5:

Rule 219 is currently under review to consider further exemptions for low emission UV/EB/LED technologies. However, in some cases, it is necessary to have a permit with associated conditions in order to verify that the operations have low overall emissions. For example, high production UV/EB/LED printing equipment may utilize low-VOC inks but may use such large quantities that overall emissions exceed offset, BACT, BARCT or emission reporting thresholds.

Response to Comment 51-6:

Your support is acknowledged.

Response to Comment 51-7:

Control measure ECC-02 proposes improvements to commercial building efficiency measures to reduce energy use for heating, cooling, lighting, cooking, and other needs. The control measure does not address the use of control equipment used during manufacturing operations. UV/EB/LED technologies are designed for manufacturing applications and are not appropriate to include in this measure. However, if UV/EB/LED technologies are developed that address heating, cooling, lighting, cooking and other building energy needs, they would be available for inclusion as alternatives.

Afterburners and similar combustion related control equipment are included in the emission inventory of the control measure. The measure does not directly quantify a process change, such as replacing a VOC emission source requiring combustion control equipment with a low emission technology like UV/EB/LED that does not require control equipment, as it is difficult to predict where pollution prevention opportunities might occur. Where possible however, the control measure should incentivize process changes that eliminate the need for combustion equipment.

Response to Comment 51-8:

Please see Response to Comment 51-7 with regard to the inclusion of UV/EB/LED technology.

Response to Comment 51-9:

Staff encourages the commenter to participate in the development of the incentive programs to ensure all options are considered particularly with regards to possible future rulemaking and potential exemptions. Please also see Response to Comment 51-5 regarding Rule 219.

Response to Comment 51-10:

Your support is acknowledged.

Response to Comment 51-11:

Your support for incentives is acknowledged but as noted in Response to Comment 51-9, any proposed action regarding access to incentives would take place during program and/or rule development.

Response to Comment 51-12:

The "Incinerators" category in CMB-01, Table 1 – "NOx Combustion Sources" does not include add-on control devices.

Response to Comment 51-13:

Comment noted.

Response to Comment 51-14:

Your support is acknowledged. Control measure FLX-01 (Appendix IV-A-99 in Draft 2016 AQMP) contains a component to conduct outreach to business owners to help implement projects that have emission benefits and short payback periods. Including industry resources, such as links to super-compliant technology providers, will be part of the outreach efforts.

Response to Comment 51-15:

Super-compliant technologies such as UV/EB/LED may be eligible for incentive funding.

Response to Comment 51-16:

Please see Response to Comment 51-5 and 51-9 regarding exemption for UV/EB processes from permitting requirements.

Comment Letter from Ramboll Environ (Comment Letter #52)

COMMENTS ON THE DRAFT 2016 AQMP ATTAINMENT DEMONSTRATION MODELING FOR THE SOUTH COAST AIR BASIN

August 19, 2016

Ralph E. Morris
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INTRODUCTION

This document represents comments from an initial review of the attainment demonstration modeling component of the draft 2016 Air Quality Management Plan (AQMP) for the South Coast Air Basin (SoCAB) released by the South Coast Air Quality Management District (SCAQMD) on June 30, 2016. The draft 2016 AQMP did not include the critical Appendix V that documents the air quality modeling, which severely limited my ability to review the draft AQMP attainment demonstration modeling. The draft 2016 AQMP on the website[1] originally stated that Appendix V would be released by the end of July 2016 with comments due by August 19, 2016. Since then, the website has been updated to state that Appendix V would be released in early August but comments are still due August 19. As of the August 19, 2016 comment deadline, Appendix V has still not been released. After the release of Appendix V, a review period of at least 30 days is needed to allow the scientific community to review and comment on the modeling that is the key technical component of the draft 2016 AQMP. 52-1

Qualifications

I, Ralph E. Morris, am a Managing Principal at the Novato, California office of Ramboll Environ US Corporation (Ramboll Environ). Ramboll Environ is a > 1,000 person environment and health consulting firm that was formed in 1982. I have over 36 years of experience in air quality modeling and in particular with the development and application of advanced photochemical grid models (PGMs) as used in the draft 2016 AQMP ozone and $PM_{2.5}$ attainment demonstration modeling. I have served on, and been an active member of, the SCAQMD's Scientific Technical Modeling Peer Review Modeling Advisory Group (STMPRAG) for over a decade. The last meeting of the STMPRAG was held on March 16, 2016[2] before the final draft AQMP attainment demonstration modeling was performed. I have performed PGM attainment demonstration modeling for numerous State Implementation Plans (SIPs), such as the current

[1] http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/Draft2016AQMP
[2] http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=STMPRMod_031616

Denver 2017 ozone SIP and past Denver 2008 ozone SIP[3], so I am very familiar with the procedures, guidance and tools needed to conduct a SIP attainment demonstration modeling. I was a member of EPA's first ozone SIP modeling guidance workgroup in 1990 that led to the initial EPA ozone SIP guidance document (EPA, 1991[4]). Although I have been employed by Ramboll Environ for over 20 years, the views expressed in this document are my own and may not represent those of Ramboll Environ or other staff of Ramboll Environ.

Documents Considered

The main documents considered were those in the draft 2016 AQMP released on June 30, 2016 and the Appendix III released at a later date. As noted above, the Appendix V modeling component of the draft 2016 AQMP was not released before the August 19 comment deadline, so I reserve the right to submit additional comments after its release.

On July 8, 2016, I requested the draft 2016 AQMP CMAQ[5] air quality modeling files that were used in the attainment demonstration modeling. The SCAQMD responded promptly to this request with the transfer of all of the ozone attainment demonstration modeling files by July 29, 2016. However, I am still waiting for the $PM_{2.5}$ attainment demonstration modeling files and have not had sufficient time to analyze the files prior to the August 19, 2016 comment review deadline.

52-1
Con't

My comments are also relying on information presented by SCAQMD during the development of the draft 2016 AQMP at the STMPRAG and AQMP Advisory Group meetings and my involvement in previous AQMPs, including the 2012 and 2007 AQMPs and dating back to the 1989 AQMP. I am also relying on my over 30 years of experience in air quality modeling within the U.S. and throughout the world and experience in conducting attainment demonstration SIP modeling.

More recently, I have been involved in a study for the Truck and Engine Manufacturers Association (EMA) that, among other things, assessed the ability of the 2012 AQMP 2008 CMAQ modeling database to reproduce the observed ozone trends over time in the SoCAB. This on-going work will also perform a similar analysis using the draft 2016 AQMP 2012 CMAQ modeling database. However, since that database was only received approximately two weeks before the August 19, 2016 comment period end date, those results are not included in my comments. Although I am relying on work we performed for EMA for some of my comments, my comments do not necessarily represent the opinions of EMA.

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[3] http://www.colorado.gov/airquality/documents/deno308/
[4] https://www3.epa.gov/ttn/scram/guidance/guide/uamreg.pdf
[5] CMAQ stands for Community Multiscale Air Quality (CMAQ) modeling system that is a Photochemical Grid Model (PGM) developed by U.S. EPA and distributed through the CMAS Center (https://www.cmascenter.org/).

COMMENTS ON THE DRAFT 2016 AQMP ATTAINMENT DEMONSTRATION MODELING

The SCAQMD should be commended on their draft 2016 AQMP modeling efforts. This is a large body of work applying complex and complicated models to arguably the most difficult air quality problem in the U.S. As with any air quality modeling effort, there are uncertainties and areas for improvements. Hopefully my comments will help improve the modeling results. 52-2

Below I present two over-arching comments on the draft AQMP attainment demonstration modeling followed by specific comments on Chapter 5 "Future Air Quality" of the draft 2016 AQMP.

Over-Arching Comments

Draft 2016 AQMP Documentation is Insufficient to Provide Informed Review and Comments on the Attainment Demonstration Modeling: As noted above, the draft 2016 AQMP documentation failed to include Appendix V "Modeling and Attainment Demonstrations" that was still not available by the August 19, 2016 comment deadline. At the end of July, the SCAQMD also provided the ozone modeling attainment demonstration database. But there is insufficient documentation and time to provide informed comments on the modeling by the August 19, 2016 comment due date. I am requesting an extension of the comment period until after the release of the modeling documentation and receipt of data files and request that the SCAQMD hold a meeting of the STMPRAG where the details of the modeling can be discussed and a more thorough peer-review conducted. 52-3

AQMP Modeling Databases Fail to Reproduce Observed Ozone Trends Resulting in Incorrect Future Year Ozone Projections and Assessment of the SoCAB's Emissions Carrying Capacity for Ozone Attainment: The CMAQ modeling in the 2012 AQMP failed to accurately reproduce the observed ozone reductions in the SoCAB resulting in higher future year ozone levels than observed and therefore a higher amount of NOx emission reduction needed to attain the ozone NAAQS. This issue became very obvious in 2015 due to the following facts: 52-4

- The 2012 AQMP modeling using a 2008 CMAQ modeling database projected that the 5-year (5Y) ozone Design Value (5Y-DV[6]) at Crestline would be reduced from 116 ppb in 2008 to 107 ppb in 2023 without any additional controls for an ozone reduction rate of 0.60 ppb/year.

[6] An Ozone Design Value (DV) is defined as the three-year average of the fourth highest Maximum Daily Average 8-hour (MDA8) ozone concentration and is compared to the ozone NAAQS to determine attainment/nonattainment. We also refer to the ozone DV as a 3-year DV (3Y-DV). To make future year ozone projections a 5-year DV (5Y-DV) is used that is an average of three years of ozone DVs centered on the year in question (e.g., for the 2012 year, $DV_{2010-2012}$, $DV_{2011-2013}$ and $DV_{2012-2014}$).

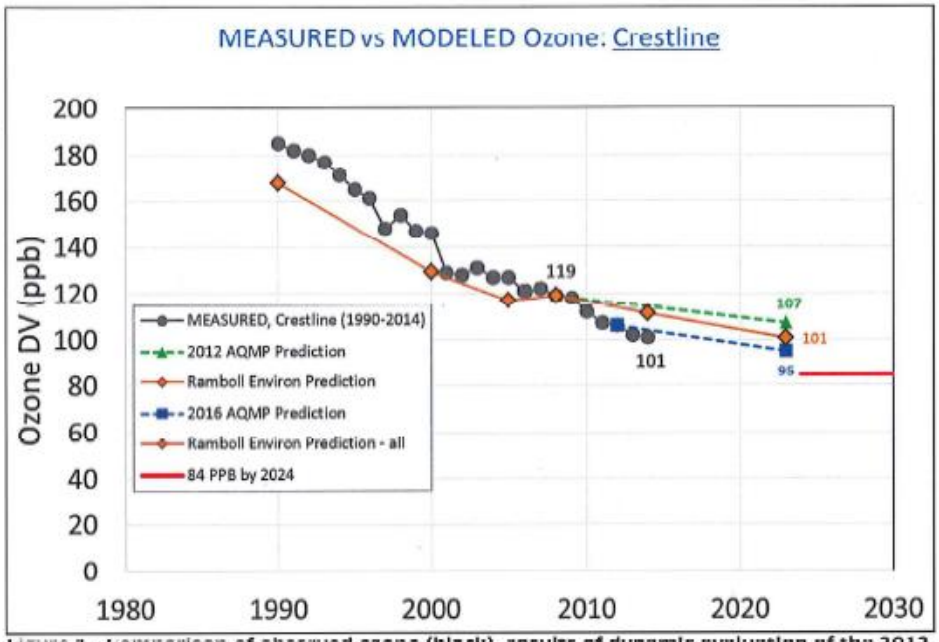

Figure 1. Comparison of observed ozone (black), results of dynamic evaluation of the 2012 AQMP 2008 CMAQ database (orange), 2012 AQMP projected ozone (green) and draft 2016 AQMP projected ozone (blue) rate of change (ppb/year).

52-4 Con't

Tables 1 and 2 compare the observed and CMAQ predicted ozone DV concentrations and rate of ozone reduction at the Crestline, Redlands and Fontana monitoring sites for the 2012 AQMP and draft 2016 AQMP, respectively. These comparisons use a simple arithmetic trend approach using the differences in ozone between the first and last year of a period to clearly and simply illustrate the differences in the observed and AQMP modeled ozone trends. A better approach would be to use regression equations, as used in the draft 2016 AQMP to derive their observed 2.3 ppb/year reduction (pages 5-4) that compare well with the simple arithmetic observed ozone trends in Table 1 below (2.14-2.43 ppb/year). Comments on the draft 2016 AQMP submitted by EMA use the regression trend approach and come to the same conclusions as shown in Tables 1 and 2 that the trend in AQMP modeled ozone reductions is much slower than observed.

The three monitoring sites in Tables 1 and 2 were selected because they have the highest current year (2012) and projected 2023 future year ozone DVs in the SoCAB. For the 2012

AQMP, the observed rate of ozone reduction (2.14 to 2.43 ppb/year) is 4 to 10 times greater than the modeled rate (0.20 to 0.60 ppb/year, Table 1). The observed rate of ozone reduction is also greater than the modeled rate from the draft 2016 AQMP. However, for the draft 2016 AQMP comparisons, there is only a three year overlap between the observed (2012-2015) and modeled (2012-2023) ozone trend period so the observed trend is more uncertain than in the 2012 AQMP comparison. We will have longer-term comparisons of the observed and modeled 2016 AQMP ozone trend comparisons when the dynamic evaluation of the draft 2016 AQMP 2012 CMAQ database is completed.

52-4 Con't

Table 1. Comparison of observed and predicted rate of ozone reductions for the 2012 AQMP 2008 CMAQ modeling database.

Monitoring Site	Observed Ozone			2012 AQMP 2008 CMAQ Ozone		
	2008 3Y-DV (ppb)	2015 3Y-DV (ppb)	Reduction Rate (ppb/yr)	Reduction Rate (ppb/yr)	2008 5Y-DV (ppb)	2023 5Y-DV (ppb)
Crestline	119.0	102.0	2.43	0.60	116.0	107.0
Redlands	116.0	101.0	2.14	0.40	109.0	103.0
Fontana	112.0	97.0	2.14	0.20	107.0	104.0

Table 2. Comparison of observed and predicted rate of ozone reductions for the draft 2016 AQMP 2012 CMAQ modeling database.

Monitoring Site	Observed Ozone			Draft 2016 AQMP 2012 CMAQ Ozone		
	2012 3Y-DV (ppb)	2015 3Y-DV (ppb)	Reduction Rate (ppb/yr)	Reduction Rate (ppb/yr)	2012 5Y-DV (ppb)	2023 5Y-DV (ppb)
Crestline	106.0	102.0	1.33	0.73	103.0	95.0
Redlands	105.0	101.0	1.33	0.79	104.7	96.0
Fontana	101.0	97.0	1.33	0.45	101.0	96.0

Specific Comments

The following are specific comments on Chapter 5 of the draft 2016 AQMP (note that other portions of the draft AQMP also use the same information as in Chapter 5).

Page 5-2: Both WRF v3.6 and WRF v3.6.1 are stated as having been used, which can't both be correct. The WRF model performance evaluation should also be included as part of the draft AQMP. Limited results have been presented at the STMPRAG meetings, but given the importance of the meteorological inputs, the full evaluation of WRF meteorological model should be made available. 52-5

Page 5-2: The document states that CMAQ v5.0.2 was used in the draft 2016 AQMP. However, we tried to run EPA's CMAQ v5.0.2[9] using the draft 2016 AQMP 2012 CMAQ database and it could not run. It appears the SCAQMD has modified the CMAQ v5.0.2 so that it is no longer the EPA version. The draft 2016 AQMP should state that a modified version of CMAQ v5.0.2 was used, what the modifications were, and how those modifications affect the modeling results. 52-6

Page 5-3: Draft AQMP states that *"Gridded daily biogenic VOC emissions were provided by CARB using the MEGAN biogenic emissions model."* However, MEGAN also produces biogenic NOx emissions. We confirmed that there are NOx emissions in the biogenic emissions input file so assume that those are from MEGAN. This is an issue because some of the past AQMPs have neglected biogenic NOx emissions. 52-7

Page 5-3: Draft AQMP states that *"Detailed information on the modeling approach, data retrieval, model development and interpretation of results is presented in Appendix V."* No Appendix V was included with the draft 2016 AQMP. 52-8

Page 5-3: Draft AQMP states that *"U.S. EPA guidance has recommended the use of relative reduction factors (RRFs)"* for projecting future year ozone Design Values implying that EPA's guidance was followed. However, this statement is ambiguous as EPA released guidance in 2007 (EPA, 2007) and draft guidance in December 2014 (EPA, 2014), which has not been finalized. Technically the 2007 guidance is the current guidance, although most groups are using the draft 2014 guidance. This brings up several questions/comments: 52-9

1. Which EPA guidance is the SCAQMD following in their draft 2016 AQMP (2007 or 2014)?
2. As it is, the SCAQMD has added an extra criterion in their future year ozone projection procedures that is not included in either of the EPA guidance documents so they are not exactly following EPA guidance. This extra requirement is that days used in calculating the model-derived RRFs must satisfy a model performance evaluation (MPE) criteria

[9] EPA's official version of CMAQ v5.0.2 as downloaded from the CMAS Center was used (https://www.cmascenter.org/).

that the modeled and observed MDA8 ozone on the day is within 20% of each other. Although I don't object to this MPE requirement, the draft AQMP should discuss the implications of adding this extra MPE requirement beyond EPA guidance. In general, the CMAQ model tends to be more responsive (i.e., higher ozone reductions) under higher modeled ozone concentrations and by adding this extra MPE requirement the RRFs will be based on lower modeled ozone days, which could make the modeled ozone concentration reductions less responsive and predict higher future year ozone DVs than if EPA guidance was followed exactly.

52-9 Con't

Pages 5-3 to 5-4: The draft AQMP notes that the observed maximum ozone DV in the SoCAB has been reduced at a rate of 2.3 ppb/year over the last 14-year period (2001-2014), with the current maximum 2014 ozone DV of 102 ppb being 28% above the 1997 8-hour ozone NAAQS (0.08 ppm) and 36% above the 2008 8-hour ozone NAAQS (0.075 ppm). Two comments on these statements are as follows:

1. Attainment of the 1997 8-hour ozone NAAQS occurs when the maximum ozone DV is below 85 ppb, so 84.9 ppb would attain the NAAQS. Thus, 102 ppb is 20% not 28% above the 1997 NAAQS. Similarly, attainment of the 2008 ozone NAAQS occurs when the maximum ozone DV is below 76 ppb, so 75.9 ppb is attainment, and 102 ppb is 34% not 36% above the 2008 NAAQS.
2. More importantly, the draft 2016 AQMP makes no comparisons between the 2.3 ppb/year rate of reduction of the observed ozone DV and the AQMP's CMAQ estimated 0.79 ppb/year rate of reduction out to 2023 and 0.62 ppb/year rate of reduction out to 2031. The fact that the draft 2016 AQMP understates the observed rate of ozone reduction by approximately a factor of 3 raises serious questions about the accuracy and reliability of the draft 2016 AQMP CMAQ-derived future year ozone projections and NOx carrying capacity. Those questions need to be studied and explained.

52-10

Pages 5-6 and 5-7: In Table 5-1 the number of days that the 75 ppb is exceeded on weekend versus weekdays is presented and explained as *"A strong 'weekend effect', typically experienced in urban areas, results from reduced NOx emissions on weekends leading to higher ozone and consequently more weekend days exceeding the standard."* However, no explanation is provided for what this means and why this is important to the AQMP. The observed "weekend effect" is a clear indication that the SoCAB is still currently on the VOC-limited side of the ridgeline where NOx reductions will increase ozone concentrations. As the draft 2016 AQMP is following a NOx emissions control strategy, this raises several questions:

52-11

1. What are the consequences of the NOx control in the near-term and on the path toward attainment? What if the control plan falls short of its goal (as they have in the past, for

example the 2010 1-hour ozone NAAQS attainment date); will ozone levels end up being worse than they are? More explanation on what these results mean is warranted.

2. Is the model able to reproduce the observed "weekend effect" in the CMAQ 2012 base case simulation? This is an important diagnostic evaluation component and gives an indication of whether the CMAQ 2012 modeling database is capturing some of the atmospheric chemistry features in the SoCAB.

52-11 Con't

Page 5-9: Table 5-2 in the draft 2016 AQMP presents the projected 2023 and 2031 ozone DVFs for the base and control scenario (i.e., the attainment demonstration modeling). The 2023 ozone DV results under the 2023 base and control case for the three highest ozone monitors in the SoCAB are reproduced in Table 3, along with the efficiency of ozone DV reductions in 2023 for the base and control scenario in tons per day NOx emissions reduced over ppb ozone reduced (TPD/ppb). The 2023 ozone DVs for the control scenario at these three sites are 79, 82 and 80 ppb. However, attainment of the 1997 0.08 ppm ozone NAAQS just requires that all ozone DVs be below 85 ppb, so the 2023 control plan is over-controlling NOx emissions to achieve a 2023 ozone DV level (82 ppb) that is lower than it needs to be (84.9 ppb). The last column in Table 1 shows what the ozone attainment NOx carrying capacity would be without this over-control, which increases the 2023 NOx carrying capacity from 150 TPD to 174 TPD. That is, the draft 2016 AQMP estimates that in 2023 115 TPD of NOx emissions are needed to attain the 1997 ozone NAAQS at all monitors. This calculation suggests that the necessary NOx controls for attainment can be reduced by ~20% (91 TPD reductions) and still demonstrate ozone attainment. The costs of the NOx controls are quite high, so the SCAQMD should pursue the scenario of reducing NOx emissions to the level needed to demonstrate ozone attainment without over-controlling.

52-12

In addition, we ran EPA's latest Modeled Attainment Test Software (MATS[10]) projection tool on the draft AQMP 2012 base case and the 2023 control case CMAQ output files provided by the SCAQMD and obtained projected future year 2023 DVs at all monitoring sites. We used the 7x7[11] approach as recommended in EPA's current modeling guidance (EPA, 2007. The projected 2023 ozone DV at Crestline, Fontana and Redlands (the three highest ozone sites) using the MATS 7x7 approach are in the 76-77 ppb range, which is 5 ppb lower than the maximum 82 ppb 2023 DV from the draft 2016 AQMP. This suggests that the 2023 ozone attainment could be demonstrated using an even higher 2023 NOx carrying capacity than the ~174 TPD discussed above and in Table 3 if the ozone projection approach in EPA's current modeling guidance is used.

[10] https://www3.epa.gov/ttn/scram/modelingapps_mats.htm

[11] MATS uses the maximum modeled MDA8 ozone concentrations in an array of grid cells centered on the ozone monitoring site. EPA's current guidance (EPA, 2007) recommends using a 7x7 array of 4 km grid cells, while EPA's draft guidance (EPA, 2014) recommends using a 3x3 array of grid cells.

Table 3. Observed current year (DVC) and 2023 projected future year (DVF) ozone DVs from the draft 2016 AQMP at three sites for the 2023 base (264.84 TPD NOx emissions) and 2023 control (150 TPD NOx emissions) scenarios with ozone reduction efficiency (TPD/ppb) and the revised ozone attainment carry capacity to demonstrate attainment of the 0.08 ppm 1997 ozone NAAQS.

Site Name	Site ID	Observed 2012 Ozone DVC (ppb)	2016 AQMP 2023 Base DVF (ppb)	2016 AQMP 2023 Control DVF (ppb)	Ozone Reduction Efficiency (TPD per ppb)	Revised 2023 NOx Carrying Capacity (TPD)
Crestline	60710005	103.0	95.0	79.0	7.178	192.3
Fontana	60712002	101.0	96.0	82.0	8.203	173.8
Redlands	60714003	104.7	96.0	80.0	7.178	185.2

52-12 Con't

Page 5-10: The draft 2016 AQMP states *"Appendix V also provides base year model performance statistics and grid-level CMAQ predictions for the base and future milestone years as well as weight of evidence discussion to support the modeling attainment demonstration."* Although some interim model performance evaluation (MPE) results have been presented at STMPRAG meetings, they were not final and incomplete. The draft 2016 AQMP was released without Appendix V so we have very little to no information on how well the CMAQ 2012 base case reproduced the observed ozone in 2012, which is the first step in the MPE process (i.e., the operational evaluation).

52-13

Page 5-19: The $PM_{2.5}$ attainment demonstration modeling discussion starts on page 5-19 of Chapter 5 of the draft 2016 AQMP. Again, details on the $PM_{2.5}$ attainment demonstration modeling are left to Appendix V, which is not yet available. Furthermore, when we requested the draft 2016 AQMP CMAQ modeling databases, complete inputs and outputs were only provided for the May-Sep ozone season so we cannot even try to analyze the $PM_{2.5}$ attainment demonstration modeling. Additional time should be provided to comment on the modeled attainment demonstration after the release of Appendix V and transfer of the $PM_{2.5}$ modeling database.

52-14

Page 5-28: This section discusses the potential ramifications of attaining the Oct 2015 0.070 ppm ozone NAAQS with an anticipated 2037 attainment date, 21 years from now. Over the last three AQMPS (2007, 2012 and 2023), the 2023 baseline NOx emissions have changed by almost a factor of two: 506, 319 and 263 TPD NOx, respectively. Given these uncertainties from past AQMPs in making NOx emissions projections 7-16 years in the future, making them 21 years in

52-15

the future is even more uncertain and such uncertainties and caveats need to be discussed in this section.

52-15 Con't

RECOMMENDED NEXT STEPS

The dynamic model performance evaluation of the draft 2016 AQMP 2012 CMAQ modeling database and modeled/measured ambient concentration and ratio analysis with comparison with emissions funded by the EMA is currently underway. The intent is to collaborate and share the results with the SCAQMD and others when they are available. When Appendix V of the draft 2016 AMQP is released, the scientific community should be allowed to review it and provide comments on the draft 2016 AQMP attainment demonstration modeling.

After the release of Appendix V and after the receipt of comments on the draft 2016 AQMP attainment demonstration modeling, we recommend that the SCAQMD should hold a STMPRAG meeting where the draft 2016 AQMP modeling, dynamic evaluation results, and comments can be discussed by the peer-review group in an open forum.

52-16

CLOSING

Thank you for the opportunity to provide comments on the draft 2016 AQMP modeling. The amount of work and effort put into the draft 2016 AQMP attainment demonstration modeling is quite impressive. Please feel free to contact me if you have any questions.

Ralph E. Morris
Managing Principal
Ramboll Environ
rmorris@ramboll.com

Responses to Comment Letter from Ramboll Environ
(Comment Letter #52)

Response to Comment 52-1:

Please see Response to Comments 38-1 with regard to the timing of the release of the Plan, appendices, and various related documents, and the ability to review and comment on those documents with appropriate time. Specifically, Appendix V and associated modeling database were released to public in September 2016 and comments were due in November, providing more than 45 days for public review.

Response to Comment 52-2:

Comment noted.

Response to Comment 52-3:

SCAQMD hosted a Science Technology Modeling Peer Review committee (STMPR) meeting on Oct 26, 2016 to discuss the revised attainment scenarios and the approaches that Ramball-Environ/EMA suggest. The presentations and minutes describing the discussions among the committee members and public are available at
http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=STMPR(Mod)_102616.

Response to Comment 52-4:

Photochemical reactions involved in ozone formation are complex and ozone levels exhibit a non-linear response to ozone precursor emissions. Ozone isopleths presented in the AQMP and VOC white paper present the complexity and non-linear nature clearly. Therefore, the improvement of ambient ozone concentration is not expected to follow a linear trend with time, as presented in the comment letter. For example, if the high ozone concentrations measured in 2016 are included in the graph presented in the comment letter, the rate of ozone improvement over time agrees reasonably well with the model prediction. More importantly, staff were unable to reproduce the measurement data presented in Figure 1. The design values in the figure did not match with EPA Air Quality System (AQS) data.

Secondly, the modeling attainment demonstration was conducted based on state-of-the art numerical models and U.S. EPA's newest guidance. The new RRF approach is more responsive to emission reductions than the methodology used in the 2012 AQMP. Namely, the 2016 AQMP is able to demonstrate attainment with less NOx emission reduction compared to the reductions assumed in the 2012 AQMP.

Thirdly, the dynamic evaluation needs to be performed cautiously since spatial and temporal allocations as well as speciation and reactivity change over time. The dynamic evaluation conducted by Ramboll-Environ did not include changes in spatial and temporal distribution of emissions that occurred over the years, therefore cannot be used to draw definitive conclusion on model performance.

In all, linear regression cannot be used to evaluate ozone trend or ozone prediction performance, given the non-linearity and complexity of ozone chemistry, therefore a comprehensive numerical modeling approach is used in the AQMP and the state-of-art modeling technique and EPA recommendation are employed in the AQMP analysis.

Response to Comment 52-5:

It is WRF v3.6.1. The full WRF performance evaluation is provided in Appendix V.

Response to Comment 52-6:

The CMAQ version used for 2016 AQMP included a modification in the subroutine "rdbcon.F", which reads lateral boundary values from the boundary conditions file. The original "rdbcon.F" repeatedly accesses boundary files at every chemical sync step, even though the boundary values stay constant during an hour window. The updated version reads the boundary values only once in every hour, which is the frequency interval of both the MCIP meteorological input file and the boundary conditions file. This modification reduces CPU time substantially by decreasing the input read time, while results do not change because the boundary values read by CMAQ are the same. The update was reported to Community Modeling and Analysis System (CMAS) center who is in charge of CMAQ update and maintenance.

An additional modification was included in the AERO_DATA.F subroutine to by-pass the reading of PH2O emissions. Emissions of PH2O is not included in the AQMP inventory. The default AERO6 subroutine in CMAQ requires PH2O emission, and if these species are not present in the emission files, CMAQ does not run. This subroutine was modified so that these species are no longer required to continue with the simulation.

Response to Comment 52-7:

The biogenic emissions used for 2016 AQMP contains biogenic NOx emissions.

Response to Comment 52-8:

Please see Response to Comment 52-1 regarding Appendix V.

Response to Comment 52-9:

The 2014 guidance, which the 2016 AQMP was based on, recommends use of the 20 percent performance criteria (U.S. EPA 2014, p.102). In addition, most of high ozone days are included in the top 10 RRF calculation days, therefore no significant bias is expected even with the MPE condition.

Response to Comment 52-10-1:

Comment noted and reflected in the draft final.

Response to Comment 52-10-2:

Ozone trend cannot be fit into a linear line due to its complexity and non-linear nature of photochemistry.

One should use great caution in drawing a straight line to project ozone trends, since the ozone progress slope will vary depending on the length and the timing of the period that the trend is retrieved from. For example, if ozone ambient data measured in 2016 is included in the trend analysis, the AQMP projected ozone progress agrees well with the measured progress. The linear regression is an overly simplified approach that is not recommended by EPA or science community.

In addition, staff were unable to reproduce the numbers provided in the table. EPA recommends to use 5-year weighted average design values, but the ozone concentrations in the table do not agree with EPA recommended 5-year design value.

Response to Comment 52-11:

CMAQ shows slightly better performance for weekends, while the model has reasonably good performance for both weekdays and weekends.

Ozone concentration goes up with reduced NOx emission under the presence of excessive NOx. The weekend effect – higher ozone during weekends when NOx emissions are lower than in weekdays – is still obvious in the Basin. This indicates a NOx reduction disbenefit, a condition that ozone concentrations increase as a result of reductions of NOx emissions. The progress in reducing ambient ozone concentrations may be slow until NOx levels become sufficiently low to overcome the NOx disbenefit. During the course to attainment, VOC reductions resulted from concurrent reduction from NOx strategy and limited strategic VOC strategies FUG-01 and CTS-01 are expected to minimize the inadvertent temporary ozone increase.

Response to Comment 52-12:

The attainment scenarios and NOx reductions required to meet the standards have been revised.

The District followed the 2014 U.S. EPA guidance to show attainment. The methodology in the 2014 guidance allows up to ~20 TPD more remaining NOx, depending on station, than the 1997 guidance.

Response to Comments 52-13:

Please see Response to Comment 52-8 regarding Appendix V of the 2016 AQMP.

Response to Comment 52-14:

Appendix V was released in September 2016 and its associate modeling input and output for the entire 2012 modeling year including PM2.5 were made available in August 2016.

Response to Comment 52-15:

The baseline emissions inventory changes over time. This reflects updated databases, improved methodology as well as regulations implemented after the release of prior AQMPs (in this case 2012 AQMP). The STMPR meeting was held on October 26th, per the request from Ramboll-Environ. Details of the modeling approaches and performance evaluation were discussed in the meeting (http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=STMPR%28Mod%29_102616) and described in Appendix V.

Response to Comment 52-16:

Please see Response to Comment 52-1. Per the request, a STMPR was held on October 26, 2016.

Comment Letter from Riverside County Transportation Commission (Comment Letter #53)

RCTC
Riverside County Transportation Commission

4080 Lemon Street, 3rd Floor • Riverside, CA
Mailing Address: P. O. Box 12008 • Riverside, CA 92502-2208
(951) 787-7141 • Fax (951) 787-7920 • www.rctc.org

August 19, 2016

Dr. Philip Fine
Deputy Executive Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Subject: Riverside County Transportation Commission – Comments on Draft 2016 AQMP

Dear Dr. Fine:

The Riverside County Transportation Commission (Commission) appreciates the opportunity to comment on the Draft 2016 Air Quality Management Plan (AQMP). The Commission is one of six county transportation commissions in the Southern California Association of Governments (SCAG) region, and administers a half-cent sales tax for transportation improvements and programs in addition to allocating federal and state transportation funds. Our program of projects consists of improvements on the multimodal system, which are consistent with the SCAG Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Riverside County is one of the fastest growing counties in the country and improvements needed to support an integrated transportation system that can accommodate a large population and employment growth are critical to the health and well-being of Riverside County residents. Therefore, the 2016 AQMP should reflect the various needs of this diverse region in relation to jobs/housing balance and disadvantaged communities. The 2016 AQMP should also avoid a one-size fits all approach and provide as much flexibility in meeting air quality goals that are fair and equitable to all sectors. 53-1

The California Air Resources Board established the Advanced Clean Transit Regulation requiring heavy-duty vehicles to meet the 2010 heavy-duty engine emission standard. Given the high costs of electric and hydrogen fuel-cell buses this requirement will put a heavy burden on transit operators that have fully converted its fleets to Compressed Natural Gas (CNG). Efforts are underway to move towards hydrogen fuel-cell fleet conversion, but the high costs will prevent a full fleet conversion by 2023. We hope funding and/or incentives are made available to convert fleets; however, given the present limitation of funding, fleet turnover will be extremely difficult to achieve by 2023. Therefore, we suggest the Advanced Clean Transit regulation can be performance based and technology neutral. 53-2

In regards to EGM-01 – Emissions Reductions from New Development and Redevelopment, it is unclear how this measure will be implemented. There seems to be some overlap and conflict with local land use authority. Local agencies in the SCAG region implement, and are consistent with, land use strategies included in the 2016 RTP/SCS. In addition, CEQA guidelines are currently being updated to reflect SB 743 requirements, which may deem this measure duplicative or unnecessary. We recommend removal of this measure or referencing the upcoming CEQA guidance on implementing SB 743. 53-3

Incentive strategies are necessary to achieve air quality goals and objectives. However, these incentives are not well defined and the funding needed to implement the incentive strategies should be clarified as "new" funding. Current funding is scarce and at its limits, therefore, new funding must be identified to reach the $14 billion identified for implementing the incentive strategies. New funding should be sought from the federal government, or current programs that the SCAQMD administers could also be reviewed for efficiencies and possible redirection towards incentive strategies. 53-4

Any new fees or increases to fees should be fully vetted by the public before adopting and enacting such increases to ensure public/private agencies and the general public are not economically burdened or disadvantaged. 53-5

We agree with the objective to develop a strategy with fair-share emission reductions at the federal, state, and local levels. Participation at the federal level in terms of reducing emissions from federal sources has not been exercised leaving the entire region disadvantaged with the difficult task of reducing emissions from sources it has no control over. Participation and support at the federal level is critical in helping the region attain its air quality goals especially with Southern California being the major gateway for commerce and logistics warehousing for the entire country. 53-6

There are many TBD measures identified, which is confusing. We recommend clarifying the inclusion of TBD measures, explaining purpose, and separating them from the rest of the measures. 53-7

Thank you for allowing us the opportunity to comment. Please contact me at (951) 787-7141 if you have any questions.

Sincerely,

Shirley Medina

Shirley Medina
Planning and Programming Director

Responses to Comment Letter from Riverside County Transportation Commission (Comment Letter #53)

Response to Comment 53-1:

Staff appreciates the support for flexibility and recognizes that the job/housing needs vary from region to region. Much of the underlying demographic assumptions are provided by SCAG as reflected in the 2016 RTP/SCS.

Response to Comment 53-2:

Your comments will be forward to CARB. SCAQMD staff believes that funding incentives will be needed to assist transit fleets to convert over to near-zero and zero-emission bus technologies. Funding is already available to transit agencies to help fund natural gas engine repowers to ultra-low NOx engines.

Response to Comment 53-3:

Under state law, the SCAQMD is required to assess rules and regulations adopted by other air agencies to ensure that all feasible measures are provided in the AQMP. As such, staff will be taking comments on whether adoption of a rule similar to San Joaquin Rule 9510, indirect source review, which seeks to achieve emissions reductions from the construction of and use of development projects through design features and on-site measures, is appropriate for the South Coast Air Basin or whether there are other actions/mechanisms to address potential emissions associated with new or redevelopment projects. The District may not dictate what land use can occur in what area but it may impose additional requirements on a source to ensure attainment to air quality standards.

During the public rulemaking process, SCAQMD staff will evaluate whether the measure is a duplicative of the SB 743 requirements.

Response to Comment 53-4:

A draft Financial Incentive Funding Action Plan is being prepared as a companion document to the 2016 AQMP. The plan will provide an analysis of potential funding opportunities and proposed actions to be taken to secure the funding identified in the AQMP. The Financial Incentive Funding Action Plan will also provide funding levels from existing programs.

Given the significant amount of funding identified, there is a need to not only seek funding from the federal government, but also at the state and local levels.

Response to Comment 53-5:

Staff agrees that any new potential funding opportunities should be discussed in a public process.

Response to Comment 53-6:

Staff agrees that participation and support at the federal level is critical in attaining the standards. CARB's SIP Strategy includes NOx and VOC reductions from federal sources that were included in the modeling and are assisting in meeting the federal air quality standards.

Response to Comment 53-7:

Please see Response to Comment 38-5 regarding the proposed SCAQMD mobile source measures. Please see Response to Comment 7-5 regarding TBD measures.

Comment Letter from Southern California Alliance of Publicly Owned Treatment Works (Comment Letter #54)

SCAP
SOUTHERN CALIFORNIA ALLIANCE OF PUBLICLY OWNED TREATMENT WORKS

REUSE
BRINGING WATER FULL CIRCLE
WASTE
TREATMENT

August 18, 2016

Mr. Wayne Nastri, Acting Executive Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765

Dear Mr. Nastri:

Re: Comments on the Draft 2016 Air Quality Management Plan

The Southern California Alliance of Publicly Owned Treatment Works (SCAP) appreciates this opportunity to provide comments on the Draft 2016 Air Quality Management Plan (Draft AQMP). SCAP represents 83 public agencies that provide essential water supply and wastewater treatment to nearly 19 million people in Los Angeles, Orange, San Diego, Santa Barbara, Riverside, San Bernardino and Ventura counties. SCAP's wastewater members provide environmentally sound, cost-effective management of more than two billion gallons of wastewater each day and, in the process, convert wastes into resources such as recycled water and biogas. 54-1

This transmittal is a follow-up to SCAP's June 2, 2016 letter regarding the Preliminary Draft of SCAQMD 2016 AQMP Stationary Source Measures. Our members remain concerned that some of the proposed control measures could negatively impact the beneficial use of biogas produced from municipal wastewater treatment plants and landfills. We would greatly appreciate modifications to the Draft AQMP to address our concerns pertaining to biogas as discussed below.

As stationary sources in the South Coast Air Basin, our members appreciate the challenge posed by this AQMP. SCAQMD is required to determine how to achieve clean air without the ability to control mobile or federal sources, which constitute the vast majority of the emissions to be controlled. SCAP objects to the proposed "fair share" concept where SCAQMD, CARB and EPA would each reduce emission sources under their control by 50 percent. We believe that stationary sources are already well-controlled and achieving our "fair share" is not feasible without a significant infusion of incentive funding. In the event that funding cannot be guaranteed, SCAP requests that CARB and EPA be assigned a greater share of the reductions required to achieve attainment. 54-2

The following outlines our specific comments on the draft stationary source control measures contained in Appendix IV-A:

SCAP
SOUTHERN CALIFORNIA ALLIANCE OF PUBLICLY OWNED TREATMENT WORKS

CMB-01 Transition to Zero and Near-Zero Emission Technologies for Stationary Sources:
This draft control measure seeks to replace traditional combustion sources with zero and near-zero emission technologies including electrification or fuel cells. The background section for this control measure continues to emphasize that biogas from wastewater treatment plants and landfills can be processed and cleaned for the use in fuel cells or transportation fuels. While our SCAP membership embraces these goals, we would again like to respectfully remind staff that biogas cleanup is not usually cost-effective and fuel cells have consistently failed prematurely due to stack failures, which then requires flaring in order to continue providing necessary management of the biogas. At minimum, to provide a realistic characterization, these challenges should be discussed in the AQMP. Clearly, without substantial funding incentives and performance guarantees, our members will be unable to justify biogas fuel cell or transportation fuel projects. 54-3

Table 4 provides a listing of incentive effectiveness by category, where wastewater treatment plants and landfills are identified. While this table was developed to provide "*…an estimate based on the specific equipment and facilities identified*", no supporting calculations or assumptions are included. We request that the methodology used to identify these units and quantify the required monetary incentive be provided for review and comment.

While we seek SCAQMD's support in incentivizing zero and near-zero biogas technologies, we do not believe these biogas technologies are truly commercially available, reliable or cost-effective yet. Due to these inherent challenges, we again request that biogas not be specifically included in this control measure.

CMB-03 Emission Reductions from Non-Refinery Flares:
While we appreciate the acknowledgement that flares are needed for emergency or backup capacity, we are concerned that our previous comments regarding the wastewater sector inventory were not addressed. Our comments outlined that SCAQMD staff provided a detailed summer planning inventory that clarified that the wastewater sector contributes only 0.01 tons per day of NOx. Considering wastewater flares are an insignificant source of NOx and they are normally used for emergency or backup purposes, SCAP requested that the wastewater sector be excluded from this control measure. Moreover, we are troubled by the inclusion of the proposed World Bank Zero Routine Flaring initiative, which is applicable to the oil and gas industry. Such a reference should be either removed or qualified as only pertaining to the oil and gas industry. We again respectfully request that such an insignificant source, composed entirely of essential public services, be excluded from this control measure. 54-4

We are also concerned that the draft control measure discussion omits a discussion of technological and financial challenges associated with biogas pipeline injection or vehicle fuel projects. The following briefly outlines some of our concerns regarding the language contained in this draft control measure: (1) wastewater treatment plants and landfills do not extract biogas

from the ground, so reinjection is not applicable, (2) our members strive to utilize biogas as a renewable resource. Nevertheless, flaring capacity at wastewater treatment plants is needed for emergency and backup purposes. Unlike wastewater treatment plants, landfill biogas continually declines in flow and methane concentration after landfill closure. The heating value of such dilute biogas cannot support most energy production applications, so facilities will need to maintain the ability to flare. Consequently, this control measure should not suggest that flared biogas can easily be used as a renewable fuel, (3) our members have installed fuel cells with advanced biogas gas cleanup systems, but premature breakthrough has significantly impacted the viability of this technology. The discussion excludes any mention of these actual operational limitations, so we request that such limitations be included and assessed by SCAQMD staff, (4) the discussion suggests that flared biogas can be used cost-effectively as transportation fuel, but in reality such projects are not financially viable, and (5) considering most biogas flares are used for emergency and backup purposes, we have difficulty understanding SCAQMD's estimated cost-effectiveness assumptions. We would like to review and comment on SCAQMD's cost-effectiveness calculations. 54-4 Con't

We respectfully request that this control measure exclude the wastewater sector, include an updated emissions inventory for landfills and wastewater treatment plants, SCAP be provided an opportunity to review and comment on SCAQMD's cost-effectiveness calculations and include a meaningful discussion regarding the technological and financial barriers limiting our ability to pursue pipeline injection and vehicle fuel projects.

MCS-01 Improved Breakdown Procedures and Process Re-Design:

Considering no SIP-creditable reductions would be obtained, SCAP does not understand the value of this proposed control measure. We acknowledge that EPA has expressed concerns regarding Rule 430 due to Startup Shutdown Malfunction (SSM) litigation and the resulting SIP Call [Federal Register / Vol. 80, No. 113 / June 12, 2015]. However, Rule 430 has yet to be disapproved by EPA and litigation challenging the SIP Call is ongoing.

Based upon our conversations with EPA, we believe that there are various approaches to address EPA's new SSM policy. In fact, EPA's SIP Call indicates that states and local agencies are allowed to issue their own enforcement discretion criteria, but such criteria cannot be binding on the United States or any citizens group. We respectfully request that SCAQMD staff review responses from individual states, which illustrates the nebulous nature of EPA's SIP Call (see http://www.arnoldporter.com/en/perspectives/publications/2016/07/how-states-are-reacting-to-epas-caa-mandate). These responses clearly justify a need for public vetting of any change to SCAQMD's SSM policy. We again recommend that this proposed control measure be excluded from the AQMP and allow legal proceedings to conclude prior to any SCAQMD rulemaking. 54-5

BCM-10 Emission Reductions from Greenwaste Composting:

While we understand that this proposed control measure is intended to reduce VOC and NH_3 54-6

emissions from chipping and grinding, we are concerned about specifically identifying vendors with non-commercial technology. In the past, our members have retained vendors with this type of technology, which were unable to achieve claimed emission levels in real-world practice. SCAP again requests that developing technology not be specifically discussed in the AQMP unless the actual performance can be demonstrated and validated in commercial and sector specific applications.

As described in our previous comment letter, we remain confused by the focus on food waste digestion in association with a greenwaste composting control measure. This draft control measure indicates that increased anaerobic digestion capacity *"...at Sanitation Districts could lower emissions of NH3 and VOC for certain waste streams..."* We agree that wastewater treatment plants can reduce emissions associated with food waste, but we are unaware of any technology that would allow wastewater treatment plant digesters to process greenwaste. Please revise this control measure to exclude the discussion of greenwaste digestion at wastewater treatment plants.

54-6 Con't

BCM-05 Ammonia Emission Reductions from NOx Controls:

While we appreciate staff's verbal clarification that this proposed control measure is only intended for large-scale projects, we respectfully request that this clarification be memorialized in the control measure. Moreover, to avoid potential confusion, SCAP recommended that this control measure be revised to indicate biogas and other small-scale projects would not be subject to ammonia emission reductions.

54-7

We would like to take this opportunity to thank you for meeting with our biogas coalition on August 9th. We look forward to working with you supporting for legislation and policies that provide financial incentives encouraging the use of biogas as a resource. Please do not hesitate to contact Mr. David Rothbart of the Los Angeles County Sanitation Districts, SCAP Air Quality Committee Chair, should you have any questions regarding our comments on the draft AQMP at (562) 908-4288, extension 2412.

Sincerely,

John Pastore, Executive Director

cc:
Dr. Philip Fine, SCAQM

Responses to Comment Letter from Southern California Alliance of Publicly Owned Treatment Works (SCAP) (Comment Letter #54)

Response to Comment 54-1:

The control measures CMB-01 and CMB-03 do not negatively impact the beneficial use of biogas, they encourage it. Under CMB-01, incentives for infrastructure and biogas cleanup would help biogas sources find beneficial uses with co-benefits for these waste streams. CMB-03 is a regulatory measure and would require emission reductions from non-refinery flares if flaring is used, but biogas operators would still be encouraged to explore beneficial uses of biogas first.

Response to Comment 54-2:

Staff appreciates the support for the incentive programs. The SCAQMD, CARB and U.S. EPA recognize the need for emission reductions from local, state and federal sources. As such, a "fair share" of reductions needs to take place. The percent emission reductions needed to meet the 8-hour ozone standards by 2023 and 2031 at 45 and 55 percent, respectively, from NOx emissions would be a guide although not a definitive endpoint. Stationary sources are already "well controlled." However, staff recognizes opportunities to transition to cleaner technologies with commercially available, cost-effective equipment. In addition, incentives could assist in accelerating deployment of advanced technologies in some cases faster than a regulatory approach. It is important to recognize the responsibility of the SCAQMD to ensure attainment of the standards in a timely manner and the District's authority over the stationary sources that could assist in meeting those required deadlines. As noted numerous times during the development of the Plan, eliminating all stationary source emissions would still not result in the standards being met, but that does not remove the responsibility of those sources, when cost-effective and feasible, to contribute to reductions.

Response to Comment 54-3:

Staff notes the challenges of transitioning to zero and near-zero technologies. The incentive measure strives to help facilities transition to zero and near-zero technologies that may not currently be the cost-effective. Incentives for infrastructure and biogas cleanup would help these sources find beneficial uses with co-benefits for these waste streams. Facilities are targeted for the long-term reduction target (2031). It is expected advancements in technology will continue and become more cost-effective once it is established. Staff also anticipates technology will evolve to address waste streams for facilities that produce low levels of biogas and market based programs like the low carbon fuel standard and renewable portfolio standard can help encourage biogas utilization. Staff has noted some of the challenges in CMB-01 such as costs for pipeline infrastructure and biogas cleanup. A working group will be formed to further discuss the challenges, including reliability, availability, and cost-effectiveness, for specific sectors on biogas. This may include a technology assessment. Biogas operators are encouraged to explore beneficial use of biogas whenever and wherever technologically feasible and cost-effective. Table 4 (formerly), currently in the Draft Final in CMB-01 as Table 5 – "Incentive Effectiveness by Category," is only a demonstration of source categories staff identified for potential emission reductions through incentive funding and costs for replacement or control equipment currently available. Upon implementation and formation of a working group, new zero and near-zero emitting technologies could be identified as well as other sources for potential NOx reductions. Staff used the permitting database and Annual Emissions Reporting (AER) database to determine specific equipment and facilities that may provide a pathway for the emission reductions using incentive funding. Staff identified all combustion source categories and the

respective emissions from the permitting and AER database to determine where emission reductions can be achieved. Staff anticipates many facilities and stakeholders will come forth and participate in the incentive program and once a working group is established it will determine the most cost-effective means for distribution of funds to achieve emission reductions.

Response to Comment 54-4:

Staff will include wastewater treatment facilities in the control measure as a possible source of emission reductions from non-refinery flares. Using the permitting and Annual Emissions Reporting (AER) system, it was determined non-refinery flares at wastewater treatment systems have low overall emissions. Once the rulemaking process begins, working group meetings will be formed to discuss the wastewater treatment facilities in detail and determine whether they should be considered an insignificant source. Staff notes the World Bank Zero Routing Flaring initiative applies to oil and gas facilities; however, it will be taken into consideration during rule development. Consideration may be made for circumstances where there is a need for an emergency or backup handling of the gas. A technology assessment may be conducted to validate the feasibility of the technology for different source categories and exemptions may be considered during the rulemaking process. Staff has included language acknowledging wastewater treatment plants may have lower waste gas streams and the options for pipeline injection may be limited. Staff has also included the emission inventory for sewage treatment, which is 0.01 tpd of NOx and is expected to remain so for 2023 and 2031. The emissions inventory will be further refined during the rulemaking process as will the cost effectiveness and technical feasibility of emission reductions from wastewater treatment facilities.

Also, please see Response to Comment 54-3 regarding challenges with biogas pipeline, reinjection, and vehicle fuels (CMB-03).

Staff acknowledges the need for emergency flaring and is not proposing a ban on flaring. Emission limits will be set on flaring. Beneficial use of biogas will be incentivized over routine flaring.

Response to Comment 54-5:

Please see Response to Comment 35-10 regarding the control measure MCS-01.

Response to Comment 54-6:

The 2016 AQMP control measure BCM-10 explores emerging technologies as a potential control method, which would be considered during the rulemaking process following a demonstration of the commercial viability and performance of this technology, as with any other emerging technology. BCM-10 proposes emission reductions from processing organic waste including foodwaste and greenwaste. While anaerobic digesters focus on foodwaste, BMP composting focuses on greenwaste.

Response to Comment 54-7:

The applicability of this control measure cannot exclude small scale projects at this point in time. Until such time where a rulemaking is conducted, a proper analysis of all sources will be able to signify which types of sources will be directly affected along with the associated emission reductions.

Comment Letter from Southern California Edison (Comment Letter #55)

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

August 19, 2016

Dr. Philip Fine
Deputy Executive Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

RE: 2016 Air Quality Management Plan

Dear Dr. Fine:

Southern California Edison (SCE) appreciates the opportunity to comment on the South Coast Air Quality Management District's (District) proposed 2016 Air Quality Management Plan. Moving the District's air basins into attainment is a step toward improved air quality and improved economic growth by increasing the ability of businesses to operate in this region. The District's proposed Plan is an effective set of control measures that, if adopted into rules by the District and other agencies, will lead the region toward attainment with the National Ambient Air Quality Standards (NAAQS) through cleaner transportation and stationary source technologies. SCE recognizes that adopting the control measures in the AQMP is the first step in the process where the District, CARB, and other agencies will develop the control measures into proposed rules, and that the rulemaking process is where the detailed examination of issues such as cost-effectiveness, feasibility, total cost, environmental impacts and "upstream" energy sectors impacts will occur. SCE also recognizes that many control measures will not become rules but instead require the District and the stakeholder community to secure additional funding sources to enable research, development and demonstrations, as well as education programs and incentive based commercialization programs. SCE supports this overall direction and effort to bring the region into attainment with the NAAQS. 55-1

SCE recommends that the Plan specifically include a long-term, large-scale, and comprehensive role for utilities to implement the transportation-electrification provisions of Senate Bill 350 (2015). Both investor-owned utilities and publicly-owned utilities have a role in increasing transportation electrification within California. Publicly-owned utilities are currently investing in transportation electrification, and seeking new ways to be involved across all transportation segments. SB 350 directs investor-owned utilities to propose and implement programs and investments to accelerate widespread transportation electrification in order to help meet several long-term state goals and federal air-quality standards. Further, SB 350 defines transportation electrification in a very broad manner. Many of the interagency partners are and should continue to work with the Public Utilities Commission to implement SB 350 in the most effective fashion, and to extend limited state funds.

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Rosemead, CA 91770

To the extent utilities are providing and will provide transportation-electrification infrastructure and investments, state agencies should seek to avoid duplicating or boxing-out utility investment. The Plan should specifically call for a utility public-private partnership regarding, for example: investments in charging and propulsion infrastructure, market-education and outreach programs, incentive programs, pilot projects, and electric rates designed with transportation electrification in mind. Also, the District should work with the CPUC and the Utilities as utility applications for infrastructure projects are developed and licensed. Achieving the infrastructure needed to deploy zero-emission technologies is a significant challenge; utility participation is needed to aid both the private and public sector in deploying these technologies. 55-1 Con't

SCE also recognizes that, occasionally, past control measures have not been successfully developed into rules because of issues discovered in the rulemaking process, and that the result was other rules on different source categories or new incentive programs were developed to replace the missing reductions in air pollution. Given this challenging situation, it is in all our interests to work with the District and other agencies to determine the most cost-effective, least impact rules resulting from the control measures in this AQMP and to secure funding for cost-effective pollution reductions from incentive programs.

Comments on Specific Stationary Source Control Measures

ECC-01 Co-Benefit Emission Reductions From GHG Programs, Polices, And Incentives

The concept of taking advantage of existing efforts to reduce GHG emissions through reduced reliance on combustion technologies certainly can be used to reduce criteria pollutant emissions. But there are situations where sources with low criteria pollutant emissions can have higher GHG emissions. An example is the Mountain View Generating Station which SCE operates. Mountain View GS is one of the lowest emitting generating stations in the United States. It achieves the low emissions because of the extremely high efficiency of the combined cycle technology. But this high efficiency also results in frequent dispatch by the California Independent System Operator. So while the generating station has low emissions of criteria pollutants, it does have relatively higher GHG emissions. As the District looks to realize and document the reductions of criteria pollutants from the GHG programs, there must be the recognition of what might appear to be conflicting outcomes in some situations. 55-2

When looking across the entire electric generation sector, there has been seen a continued reduction in GHG emissions and criteria pollutants as a result of the state mandated Renewable Portfolio Standard, and the SCE Preferred Resources Pilot. Both programs look to achieve cleaner energy generation through the adoption and procurement of renewable energy. As is pointed out in your discussion of Proposed Method of Control, there will be continued expansion of regulations which will increase zero emission renewable resources.

ECC-2 Co-Benefits From Existing Residential And Commercial Building Energy Efficiency Measures 55-3

Southern California Edison, as authorized by the Public Utilities Commission, has an exsiting energy efficiency program. As noted in your description of this control measure, SB 350 require the CPUC to establish efficiency targets for the utilities. This will require regulatory action at the Commission which will allow the District the opportunity for input into that process and to work jointly with SCE and other stakeholders as the regulations are developed at the PUC.

55-3 Con't

The focus on energy efficiency measures should also be a coordinated effort where existing utility sponsored programs are jointly offered to disadvantaged communities along with any programs the District may develop. This will allow for greater outreach and for the opportunity to have community members pick a program that best suits their needs and for which they are qualified.

ECC-03 Additional Enhancements In Reducing Existing Residential Building Energy Use

Southern California Edison has experience in smart grid technology and, through our energy education programs, we have assisted customers in the selection of appropriate smart technology to reduce energy use. While costs for conversion of household energy usage through solar and storage are still expensive, use of electric water heaters as an energy storage device that can be cycled to use non-peak energy can be a very efficient first step for consumers. The major concern with this control measure is the funding for the incentives. Without the incentives, much of this proposal will be unachievable. The District will need to partner with all stakeholders to develop the strategy to obtain the needed funds.

55-4

CMB-01 Transistion To Zero And Near-Zero Technologies For Stationary Sources

This is one of the more complex and aggressive control measures with many different facets. To incorporate combined heat and power, changes in flaring technologies, process heating and steam production, along with smart grid and new storage technologies is a major undertaking. Developing rules that will satisfy the Clean Air Act Requirements just adds to the complexity. The implementation of the smart grid and storage technologies will require very close coordination with Southern California Edison at the front end of any projects associated with this control measure.

55-5

When an entity contemplates the use of additional electric generation through CHP which could feed back into the grid or the addition of possible storage technologies, there first must be an engineering analysis regarding the local electric circuits. The assertion that grid based energy storage systems can reduce the need for additional peaker generation is correct for short term energy needs. But the local circuits must be capable of handling the two way power flows for charging the battery and feeding power back into the grid. The determination of these capabilities requires complex and time consuming analysis as required by CPUC regulations. SCE can support the concepts articulated in this proposal, but we need to highlight the technical realities associated with implementation.

SB 350 mandates the CPUC to have regulated energy companies develop plans for increased use of renewable resources. This requirement, along with Edison's existing energy storage development programs, should provide useful information that will assist in the implementation of these concepts. But there are still regulatory actions related to SB 350 at the CPUC. The District should work closely with Edison to inform that regulatory process and ensure the final result is achievable and compliments the goals of this control measure.

55-5 Con't

CTS-01 Further Reductions From Coatings, Solvents, Adhesives, and Sealants

In the electric utility industry, there are many pieces of equipment that must be maintained on a regular basis to ensure grid reliability. This includes switching equipment, and generation equipment. In many cases the manufacturers of this equipment specify the use of denatured alcohol as the only approved cleaning solvent; the use of an unapproved solvent will void the warranty of the equipment and will possibly result in an unsafe condition if any residue remains on the equipment following cleaning or maintenance. Southern California Edison, Los Angeles Department of Water and Power and San Diego Gas and Electric have had several conversations with the Air Resources Board to raise some concerns with their Consumer Products Regulations. The ARB is working with the utilities to determine how to address the issue.

55-6

This raises concerns with any proposed changes to SCAQMD Rule 1171. SCE performs maintenance activities under the provisions of Rule 1171 (g) (4). While we do not use a large amount of the solvent, it is a necessary product for appropriate maintenance of critical electrical equipment. The District will need to work closely with the utilities and ensure that, while we focus on a shift to zero emission technology, we do not have unintended results that will affect the fuel source for that technology.

Comments on Specific Mobile Source Control Measures

MOB-05 Accelerated Penetration Of Partial Zero-Emission And Zero Emission Vehicles

Southern California Edison supports the proposals in MOB-05. Making incentives available for the purchase of zero emission electric vehicles is a timely move that will mesh nicely with the SCE Charge Ready Pilot. This pilot program is moving forward with the goal of putting in infrastructure and helping with the costs for the installation of 1500 charging stations, many in disadvantaged communities. The program can greatly increase the number of workplace charging stations that can add additional incentives for the use of electric vehicles. The development of a funding mechanism which will make the purchase of these zero emission vehicles more economical, with additional incentives for low income purchasers, compliments the Edison Charge Ready pilot.

55-7

MOB-07 Accelerated Penetration Of Partial Zero-Emission And Zero-Emission Light-Heavy Duty And Medium-Heavy Duty Vehicles

Southern California Edison supports control measure MOB-07. The emphasis on zero emission technology holds the most potential for reducing NOx emissions in the basin and it also has the advantage of proving the technology to other fleet operators. The analysis which will determine what types of trucks and engines can be used for this control measure must be a high priority. But this measure will help to move towards cleaner fleets. 55-8

MOB-09 On-Road-Mobile Source Emission Reduction Credit Generation

Southern California Edison supports control measure MOB-09. While this will have some limitations as a result of the necessary quantification protocol in Rule 1612, it still adds to the improved deployment of zero emission technology. It is one more option that either a project proponent in need of credits, or someone wishing to sell the credits might use. 55-9

MOB-11 Extended Exchange Program

Southern California Supports AQMP Control Measure MOB-011 Extended Exchange Program. The ubiquitous use of gasoline powered lawn equipment makes this control measure one that can realize efficient emission reductions particularly in areas, such as parks and recreation areas, where they are in close proximity to human activity. This control measure may offer an area for collaboration with SCE in assisting with the logistics and program publicity. 55-10

Southern California Edison appreciates the work that has been put into the AQMP and we look forward to working closely with the District during the rulemaking process.

Sincerely,

Thomas Gross

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Responses to Comment Letter from Southern California Edison
(Comment Letter #55)

Response to Comment 55-1:

Staff appreciates the participation in the development of the 2016 AQMP and support for the overall direction of the Plan. Transportation electrification will play an important role in the future for our region and SCAQMD will certainly be interested in the impacts from the implementation of SB 350.

The commenter recommends that the 2016 AQMP "include a long-term, large-scale, and comprehensive role for utilities to implement the transportation-electrification provisions of Senate Bill 350". To develop a large-scale and comprehensive role as part of the 2016 AQMP is beyond the scope of the AQMP. However, Chapter 10 of the Draft Final 2016 AQMP includes an overall discussion of the role utilities will play in helping the region meet federal air quality standards. Several activities are proposed for the SCAQMD to engage in, including "coordinating planning, technology demonstration, and incentive program efforts"; "schedule for infrastructure and technology needs"; and "provide technical and project assistance", which staff believes will address the long-term role of the utilities will have. As part of this activity, the role utilities will have can be further defined.

Response to Comment 55-2:

Staff will be cognizant of any potential conflicting outcomes when tracking co-benefits from ECC-01 and appreciates the comment.

Response to Comment 55-3:

As the SCAQMD has done in the past, staff will work collaboratively with Southern California Edison and all stakeholders to address implementation of the incentive and co-benefit measures.

Response to Comment 55-4:

Please see Response to Comment 55-3 with regard to partnering with stakeholders. Please see Response to Comment 26-3 regarding the Financial Incentive Funding Action Plan.

Response to Comment 55-5:

Staff agrees that implementation of control measure CMB-01 will not be an easy task and there will be technical hurdles to overcome to be successful. Chapter 10 in the Revised Draft Plan now includes a statement on using electric water heaters as a form of energy storage during excess renewable generation and a grid resource when load reductions are needed. Staff appreciates the need for engineering analysis to ensure compatibility with the grid.

Response to Comment 55-6:

SCAQMD staff will work closely with stakeholders when considering VOC reductions to ensure safe and effective alternatives exist.

Response to Comment 55-7:

SCAQMD staff appreciates the comments and support for District Measure MOB-05 and looks forward to working with the commenter on expanding the infrastructure in support of the greater number of zero-emission vehicles.

Response to Comment 55-8:

SCAQMD staff appreciates the comments and support for District Measure MOB-07 and looks forward to working with the commenter on expanding the infrastructure in support of the greater number of zero-emission vehicles.

Response to Comment 55-9:

SCAQMD staff appreciates the comments and support for District Measure MOB-09 and looks forward to working with the commenter on expanding the infrastructure in support of the greater number of zero-emission vehicles.

Response to Comment 55-10:

SCAQMD staff appreciates the comments and support for District Measure MOB-11 and looks forward to working with the commenter on expanding the infrastructure in support of the greater number of zero-emission equipment.

Comment Letter from Southern California Gas Company (Comment Letter #56)

SoCalGas
A Sempra Energy utility

George I. Minter
Regional Vice President
External Affairs & Environmental Strategy
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August 19, 2016

Philip Fine, Ph.D.
Deputy Executive Officer
Planning, Rule Development & Area Sources
21865 Copley Drive
Diamond Bar, CA 91765

Submitted via OnBase Comment Form

RE: Comments on the Draft 2016 Air Quality Management Plan

Dear Dr. Fine:

Southern California Gas Company (SoCalGas) appreciates the opportunity to provide comments on the South Coast Air Quality Management District's (SCAQMD) Draft 2016 Air Quality Management Plan (AQMP). SoCalGas strongly supports SCAQMD's efforts to develop an integrated AQMP to demonstrate attainment of the ozone and fine particulate matter (PM2.5) National Ambient Air Quality Standards (NAAQS). The attainment of the Clean Air Act standards is vitally important to those communities in which SoCalGas operates and provides natural gas service.

Throughout the AQMP process we have offered our support, technical expertise, and partnership to SCAQMD on the development of control measures and inventories. Going forward, we welcome continued collaboration through participation in working groups, efforts to co-fund research and development for advanced technology solutions, and partnership on incentives programs. SoCalGas respectfully submits the following comments on the Draft 2016 AQMP. 56-1

I. A Robust Mobile Source Strategy is Key to Demonstrating Attainment

This AQMP poses unique and daunting challenges as attainment of the 1997 and 2008 8-hour ozone standards (80 parts per billion and 75 parts per billion, respectively) require a 43 percent reduction in nitrous oxides (NOx) by 2023 and a 55 percent reduction in NOx by 2031. The challenge in achieving emissions reductions on this scale in the next seven to fifteen years is compounded by the fact that SCAQMD has limited authority, if any, to control the majority of 56-2

the emission sources in the South Coast Air Basin (Basin). Mobile sources emit over 80 percent of regional NOx emissions, with heavy-duty trucks as the single largest contributor.[1]

Accordingly, SCAQMD's fair-share approach properly assigns responsibility to those sources that are the most significant contributors to NOx emissions in the Basin, and provides a clear path to attainment. SoCalGas strongly supports this approach that allocates mobile source emission reduction commitments to the California Air Resources Board (ARB) and to the U.S. Environmental Protection Agency (EPA), while still committing to a partnership with ARB and EPA to seek emissions reductions from these mobile sources locally. However, all emission reduction commitments in the AQMP (from SCAQMD, ARB, and EPA) must be supported by adequate inventory data, as well as cost-effectiveness and feasibility analyses. Anything less could result in an over-commitment by SCAQMD, ARB, and/or EPA to emissions reductions, which will then have to be reconciled from the already heavily regulated stationary source sector. 56-2 Con't

Near-Zero Emission Trucks Are Necessary to Reach Air Quality Goals. SCAQMD and ARB are aligned in their recognition that dramatic reductions in NOx emissions from heavy-duty trucks must be achieved by 2023. To do so, California needs an accelerated transition to near-zero heavy-duty trucks for those trucks based in California, and a complimentary new federal heavy-duty truck emission standard to address trucks that operate in the state but are not registered here. As ARB's Mobile Source Strategy notes, "[a]bout 60 percent of total heavy-duty truck [vehicle miles traveled] in the South Coast on any given day is accrued by trucks purchased outside of California, and are exempt from California standards."[2] SoCalGas is supportive of ARB's proposed federal low NOx standard and submitted letters supporting both SCAQMD's and San Joaquin Valley Air Pollution Control District's (SJVAPCD) Petitions to EPA requesting such a standard.[3] 56-3

As SCAQMD well knows, in 2015, Cummins Westport Inc. certified the world's first heavy-duty engine at near-zero emission levels – 90 percent below the existing federal NOx standard, and certified to meet ARB's lowest-tier optional near-zero emission standard (0.02 g/bhp-hr NOx), while also reducing greenhouse gases (GHGs) by 15 percent. This "next generation" heavy-duty natural gas engine is now commercially available for transit bus, refuse, school bus, and medium-duty truck applications. And, the commercialization of additional near-

[1] The top six NOx emissions source categories are: heavy-duty trucks (45 tons per day NOx), off-road mobile equipment (43 tons per day NOx), ships and commercial boats (34 tons per day NOx), locomotives (23 tons per day NOx), cars and light duty vehicles (22 tons per day NOx), and aircraft (16 tons per day NOx). Draft 2016 AQMP, Chapter 4, p. 4-7.

[2] ARB, "Mobile Source Strategy," p. 46 (May 2016), *available at*: http://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.pdf.

[3] South Coast Air Quality Management District, "Petition to EPA for Rulemaking to Adopt Ultra-Low NOx Exhaust Emission Standards for On-Road Heavy-Duty Trucks and Engines," (June 3, 2016), *available at*: http://www.aqmd.gov/docs/default-source/default-document-library/news-docs/nox-petition-to-epa-june-2016.pdf?Status=Temp&sfvrsn=2; San Joaquin Valley Air Pollution Control District, "Petition Requesting that EPA Adopt New National Standards for On-Road Heavy-Duty Trucks and Locomotives Under Federal Jurisdiction" (June 22, 2016), *available at*: http://www.valleyair.org/recent_news/Media_releases/2016/PR-District-Petitions-Federal-Government-06-22-16.pdf. SoCalGas' Letters of Support are included as Attachments A and B.

zero emission heavy-duty natural gas engines are expected to follow by 2018, addressing a wider array of medium- and heavy-duty on-road applications.

56-3 Con't

The technology to achieve the massive and necessary NOx emissions reductions is at our fingertips. This is truly the case in the heavy-duty trucking sector. SoCalGas strongly supports SCAQMD's efforts to accelerate the deployment and market penetration of these vehicles through incentive programs.

II. Stationary Sources Have Substantially Reduced Their Emissions, But Require Incentives to Spur Advanced Technology Solutions

While the vast majority of the emissions reductions needed for attainment must come from mobile sources, reductions from stationary point and area sources within the Basin are a necessary corollary. SoCalGas is committed to help facilitate the development, commercialization, and deployment of near-zero emission equipment that is cost-effective and technologically feasible.

Industrial Modernization Requires Accurate Inventories and Facility-Specific Solutions. After decades of regulation and ratcheting down emissions limits, the major stationary sources simply cannot achieve the scale of emissions reductions needed for attainment with currently available cost-effective technologies. The industrial modernization measure (CMB-01) proposes incentive programs to spur the replacement of combustion equipment (e.g. boilers, turbines, and engines) at facilities as well as identifying the 66 largest, non-RECLAIM NOx emitting facilities as candidates for incentives and modernization protocols.[4] The breadth of this control measure is quite large, and an accurate emissions inventory is a critical first step to ensure the success of programs derived from the measure (see Attachment 1 for more detailed comments). However, with work on inventories and refinement of strategy, SoCalGas believes that the incentives contemplated in this measure could successfully encourage more rapid turnover of antiquated equipment, and the use of advanced, near-zero emission control technology that is not yet cost-effective.

56-4

Controlling Small, Area Sources Can Be Costly and Difficult to Implement. The majority of the other stationary source control measures focus on smaller emissions sources scattered throughout the Basin. For example, the measures addressing emissions from space and water heating equipment (CMB-02) as well as cooking equipment (CMB-04) reach beyond commercial facilities and into the home. These measures deserve special scrutiny if for no other reason than the fact that CMB-04 has the highest Amortized Annual Average cost, and CMB-02 has the third highest Amortized Annual Average cost.[5] The measures propose a mix of incentives-based and traditional command and control approaches and seek a combined three tons per day of NOx reductions from thousands of area sources by 2023. The emission limits and technological advancements contemplated by these measures may not be market-ready for

56-5

[4] Appendix IV-A, p. IV-A-51.

[5] Preliminary Cost Summary Handout, Agenda Item 2, SCAQMD Scientific, Technical & Modeling Peer Review Advisory Group (July 28, 2016), *available at*: http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=STMPRSocio_072816.

several years. SoCalGas has been actively engaged with SCAQMD on these measures and while we reiterate our support for near-zero, cost-effective and feasible technological solutions, we also emphasize the importance of pursuing the deployment of high efficiency equipment and energy conservation initiatives, particularly in the residential sector. 56-5 Con't

Energy Efficiency Should Build on Past Successes. With regard to the AQMP measures specifically addressing energy efficiency, SoCalGas encourages the use of incentives for equipment upgrades, comprehensive conservation and performance assessments, and weatherization services. The proposed control measure addressing residential building energy use (ECC-03) has the second highest Amortized Annual Average cost.[6] We offer our support to SCAQMD so as to maximize and leverage existing energy efficiency programs. And, when developing energy efficiency initiatives, we emphasize the importance of flexible strategies, not singularly focused approaches (e.g. merely weatherization), and offering a range of fuel neutral solutions to optimize savings. 56-6

Renewable Natural Gas Use Can Reduce NOx, As Well As GHG Emissions. Additionally, SoCalGas has been enthusiastically engaged in conversations with SCAQMD staff about the further development of control measures that focus on the beneficial use of biogas to achieve NOx reductions from flares and other combustion sources. We offer our strong support for a control measure that delineates a pathway for conditioning and utilizing waste gas as a transportation fuel or for pipeline injection. By developing such a measure, SCAQMD has a unique opportunity to promote emissions reductions from both stationary and mobile sources. Pipeline injection is a win-win scenario as it not only diverts gas from being combusted in a flare, but also decarbonizes the natural gas supply. Then, when the biogas is utilized as renewable natural gas (RNG), the lowest carbon intensity transportation fuel, in an ultra-low NOx engine, we can achieve significant criteria pollutant as well as GHG reductions. 56-7

The Renewable Transportation Fuel Industry Must Grow Quickly, Aided By Fuel Neutral Policies. SoCalGas also notes that ARB has a proposed "Low-Emission Diesel Requirement" in the Mobile Source Strategy that intersects with SCAQMD's proposed biogas control measure and incentive programs for near-zero heavy-duty trucks. The objective of ARB's measure is to replace 50 percent of diesel demand with low emission diesel by 2031, thereby establishing a state policy that could significantly bias the growth of the biofuels industry and limit innovation in the alternative fuels markets.[7] As we all know, this industry needs support to grow, especially to reach production levels anticipated in these plans for both renewable diesel and RNG. Because there is a finite amount of investment funding available, it is critical to consider the implications of these policies on the growth and innovation of the nascent biofuels industry. We seek clarification on the role of biogas and renewable diesel within the appropriate transportation markets. To inform a policy assessment on the growth of the renewable fuels industry, we urge SCAQMD and policymakers to examine the respective 56-8

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[6] *Id.*

[7] "Mobile Source Strategy," California Air Resources Board (May 2016), p. 153, *available at*: http://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.pdf.

renewable biofuels technologies, costs, energy consumption, feedstock impacts, and near- and long-term environmental benefits. 56-8 Con't

III. Identifying Revenue Sources for Incentive Funding is Critical to the Success of the Attainment Strategy

SCAQMD has made it clear that traditional command and control regulations simply cannot achieve the emissions reductions necessary to attain the federal ozone and particulate matter standards by the legally mandated attainment dates. Historical heavy-duty vehicle turnover rates must be accelerated, and advanced emission control equipment, which is not yet cost-effective, must be deployed to achieve the scale of emissions reductions required by 2023. SoCalGas agrees that an incentive-based approach is the only way to obtain the necessary emissions reductions in the timeframe required without putting a significant and disproportionate economic burden on residential, commercial, and industrial sources in the Basin. Without incentives to defer the costs of advanced technology when equipment is replaced, the cost-effective control technology options available to replace older equipment will likely not result in sufficient emissions reductions by 2023. Thus, SCAQMD is appropriately looking beyond traditional regulatory approaches to demonstrate attainment. 56-9

The incentives plan delineated in this AQMP comes with a price-tag of one billion dollars per year for 15 years. SoCalGas acknowledges that securing funding at that level will be no small feat. And, incentives that benefit all residents of the Basin should be funded by all citizens. To that end, we offer our support for SCAQMD's efforts to identify incentive dollars at the federal, state, and local levels to address the Basin's unique air quality challenge and look forward to Staff's development of a more specific funding framework. SoCalGas recognizes that it is incumbent upon industry to step up to help identify revenue sources, facilitate equipment turnover, maximize efficiencies, and support the development of the next generation of advanced technology solutions.

The AQMP Incentive Program Should Encourage Local Manufacture of Low Emission Equipment. SCAQMD and the State of California are national and global leaders in trying to develop an economy that will continue to provide an attractive standard of living, while reducing the pollution and associated health impacts upon our residents. Incentives are needed to do this. And, these incentive programs can be structured to attract new, clean manufacturing and new jobs to our area. We encourage SCAQMD, ARB, and EPA to broaden their efforts to seek new funding and leverage these financial incentives to develop clean industries for our region. 56-10

IV. Comments on Individual Control Measures

Our comments, presented in the following attachments, are organized by control measure and AQMP chapter. To facilitate further discussion and mutually beneficial coordination, we have included a SoCalGas subject matter expert's name and email address for each of the individual comments. Please do not hesitate to also reach out to Noel Muyco, Environmental Affairs Program Manager, at (213) 215-3397 or NMuyco@semprautilities.com, with any questions.

Comments are provided on the following control measures and AQMP chapters:

Appendix	Control Measure / Chapter	SoCalGas Contact
1	CMB-01: Transition to Zero & Near-Zero Emission Technologies for Stationary Sources	Daniel McGivney DMcGivney@semprautilities.com
2	CMB-02: Emission Reductions From Commercial And Residential Space And Water Heating	Steve Simons SSimons@semprautilities.com
3	CMB-03: Emission Reductions From Non-Refinery Flares	Daniel McGivney DMcGivney@semprautilities.com
4	CMB-04: Emission Reductions From Restaurant Burners and Residential Cooking	Steve Simons SSimons@semprautilities.com
5	FUG-01: Improved Leak Detection and Repair	Charles Humphrey CHumphrey@semprautilities.com
6	BCM-01: Further Emission Reductions from Commercial Cooking	Steve Simons SSimons@semprautilities.com
7	MOD-7: Accelerated Penetration of Partial Zero-Emission and Zero-Emission of Light-Heavy and Medium-Heavy-Duty Vehicles MOB-8: Accelerated Retirement of Older On-Road Heavy-Duty Vehicles	Jerilyn Mendoza JMendoza5@semprautilities.com
8	Chapter 10: Climate and Energy	Geoff Danker GDanker@semprautilities.com

Respectfully submitted,

George I. Minter
Regional Vice President, External Affairs & Environmental Strategy

SoCalGas Comments on the Draft 2016 AQMP

Appendix 1

CMB-01: Transition to Zero & Near-Zero Emission Technologies for Stationary Sources

I. Summary of the Control Measure

This measure seeks NOx and VOC emissions reductions from replacement of traditional combustion sources, including internal combustion engines (stationary and emergency), turbines, boilers, furnaces, ovens, and flares with zero and near-zero emission technologies. Replacement technologies are identified as including fuel cells, electrification, beneficial use of waste gas, energy storage, as well as maximizing existing energy efficiency measures.

II. Proposed Method of Control

Two pathways for emission reductions are contemplated:

(1) Implementation Schedule for Zero and Near-Zero Emission Technologies.

SCAQMD will develop and adopt an implementation schedule for non-power plant combustion sources that generate power for electricity either through distributed generation, facility power, process heating, and/or steam generation. Equipment such as engines, turbines, and boilers will be identified based on age in an "implementation schedule." Incentives will be provided to allow early retirement and advanced replacement with zero and near-zero emission technologies.

(2) Incentivizing Facility Modernization.

SCAQMD will incentivize emission reductions from various stationary and area sources through Voluntary Incentive Programs (VIPs). Facilities would qualify for incentive funding if they install zero or near-zero equipment or accept permit conditions resulting in cost-effective emissions reductions that are beyond existing requirements. Landfills and municipal solid waste facilities are examples of facilities where such modernization could occur.

56-11

III. Comments

A. Distinguishing Between the Methods of Control

SoCalGas supports the incentives-based approach as the most efficient, cost-effective method to spur equipment turnover and facility modernization. However, we are not clear on the distinction between the Zero and Near-Zero Technologies Implementation Schedule and the Facility Modernization methods of control.

Is it SCAQMD's intent that an Implementation Schedule be developed as a first step towards incentivizing early retirement and advanced replacement of equipment? Would the equipment identified in the Implementation Schedule be eligible for incentives by equipment type? Or would incentives be limited to the VIPs identified for facilities subject to the Facility Modernization pathway? Both pathways appear to use equipment age as a trigger for targeting equipment and sources for replacement or modification, and both discuss the use of incentives. We would appreciate clarity on how SCAQMD intends to prioritize categories of equipment and facilities targeted by this control measure.

As noted in our earlier comment letter (May 20, 2016), SoCalGas recommends that the development of any Implementation Schedule or VIP should consider "an additional filtering analysis that considers feasibility and cost-effectiveness before committing to an across-the-board percentage reduction." These are important criteria needed for development and implementation of any SIP-creditable mechanism.

B. Emissions Inventories

We commend SCAQMD for revising the top-down approach initially included in this draft control measure and constructing a bottom-up emissions inventory of non-RECLAIM, combustion sources in the Annual Emission Reporting (AER) program. Working from actual inventory profiles provides an important starting point for identifying feasible, cost-effective emissions reductions.

However, SoCalGas is troubled by the large inventory numbers included in this measure. Based on information provided in Table 1, there are 12,928 Stationary Internal Combustion Engines (ICEs) emitting 22.5 tons per day of NOx in the South Coast Air Basin.[1] Over 9,000 of those ICEs were permitted on or before 2010, emit 11 tons per day of NOx, and are identified as eligible for VIPs.[2] Additionally, Table 1 identifies boilers as an equipment category that emits 8.3 tons per day of NOx. And, all of the equipment categories in Table 1 total out to 38 tons per day of NOx. But, the CMB-01 Control Measure Summary states that the entire Summer Planning NOx Inventory in 2012 for all non-RECLAIM combustion sources included in this measure is 22.3 tons per day of NOx.[3] This is far less than the tonnage included in Table 1. Moreover, the total fuel combustion in the 2012 Summer Planning Emissions inventory listed in Appendix 3 is 29.18 tons per day of NOx.[4] These inventory numbers are inconsistent and point to the fact that the AER-derived data appears to overstate emissions.

56-11 Con't

C. Emission Reductions Solutions Should Be Technology Neutral

Opportunities to reduce emissions should be analyzed on a technology neutral basis. For example, advancements in engine control technology could reduce emissions well below current standards. While combined heat and power (CHP) applications were mentioned in previous drafts of this measure, the current draft appears to choose fuel cells and battery storage as winning technologies.

SoCalGas strongly recommends that energy efficiency improvements and increased deployment of CHP and micro-CHP be considered as part of the suite of technology solutions. Conventional generation technologies (e.g. engines, turbines, micro-turbines) that are configured for CHP feature the exact same benefits being attributed to fuel cells. Additionally, CHP offers numerous other advantages including higher overall energy efficiency metrics due to increased waste heat utilization from higher quality waste heat, higher reliability and durability, and vastly lower fixed and variable costs. The U.S. Environmental Protection Agency (EPA) recognizes that CHP systems generally have a system efficiency greater than 60 percent, and can be as high

[1] Table 1 - NOx Combustion Sources, Draft 2016 AQMP Appendix IV-A, p. IV-A-50.
[2] Table 2 – Breakdown of ICEs, Draft 2016 AQMP Appendix IV-A, p. IV-A-50.
[3] Control Measure Summary, Draft 2016 AQMP Appendix IV-A, p. IV-A-42.
[4] Attachment B – 2012 Summer Planning Emissions by Source Category in South Coast Air Basin (Tons/Day), Draft 2016 AQMP Appendix 3.

as 90 percent.[5] Further, CHP systems provide a unique capability to produce high pressure steam (in excess of 320 degrees Fahrenheit) that is necessary for many industrial applications (whereas the current fuel cell technologies have waste streams achieving a maximum of 250 degrees Fahrenheit). Thus, the environmental, economic, and operational benefits of current CHP technology should be considered.

Although we continue to discourage mandating a specific technological pathway, as discussed in our prior comment letter (May 20, 2016), SoCalGas supports incentivizing fuel cells as advanced technology solutions. Fuel cells may emit less on a megawatt-hour basis than a CHP system and, at first glance, may appear to be less costly to operate. But, when boiler fuel costs are taken into account, they are actually more expensive. While natural gas prices fluctuate, at a fully bundled price of $0.50/therm (commodity plus transportation), fuel cells can cost an additional $1.50/hr to $7.50/hr to operate compared to a natural gas engine. This would be in addition to the $7,000/kW price a customer would have to pay for a new system. Incentives could help overcome these cost barriers.

Additionally, while replacing CHP with fuel cells may cost a customer additional money, new fuel cells and CHP projects will provide a customer savings on their utility bills all while emitting no more than 0.07lbs NOx/MWh. This would provide a cost-effective solution, while lowering NOx emissions from the grid.[6]

Further, providing incentives for fuel cells and new CHP systems will create a more robust marketplace. Currently, there are several examples of ultra-clean CHP and fuel cells ready for commercial application. SCAQMD has permitted ICEs that meet the rigorous Rule 1110.2 electric generation emissions standard, and there are at least two ultra-clean, commercially available ICE systems for CHP applications (e.g. Tecogen and Jenbacher). There are also three fuel cell manufacturers that have several installations in Southern California: Bloom, Fuel Cell Energy, and Doosan (previously United Technology).

56-11 Con't

With regard to the discussion about energy storage, SCAQMD seems to assume that energy storage systems will be charged by renewable energy generation when available. However, there is currently no requirement that energy storage be used in this manner and we caution against making that emissions assumption. In actual practice, energy storage systems are frequently charged at a time when renewable generators are not producing power, which means that the storage system is charging from the grid and NOx emissions are simply being shifted to electric generating units. California's Self Generation Incentive Program (SGIP) data shows that in Southern California Edison and SoCalGas territory, out of 98 non-residential, Advanced Energy Storage systems installed, only three have been paired with a renewable resource. In addition, less than 25 percent of over 500 pending projects are projected to be attached to a renewable resource.[7]

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[5] "CHP Benefits," U.S. Environmental Protection Agency, *available at*: https://www.epa.gov/chp/chp-benefits.
[6] Southern California Edison's utility owned generation had a NOx emission factor of 0.1 lbs/MWh in 2014. *See* "Corporate Responsibility Report," Southern California Edison (2014), p. 52, *available at:* https://www.sce.com/wps/wcm/connect/c0fceef5-e04a-4287-8301-8e66e3e5fbac/2014_Corporate+Responsibility+Report_FINAL+single-page.pdf?MOD=AJPERES&ContentCache=NONE.
[7] "SGIP Weekly Projects & Budget Reports," Self-Generation Incentive Program, California Public Utilities Commission, *available at*: http://www.cpuc.ca.gov/sgip/.

D. Incentive Programs

In order to bring fuel cells and other emerging technology to market, incentives that provide actual dollars towards capital costs would be most beneficial. Additionally, we encourage SCAQMD to consider including equipment retrofits as part of its incentives program. Retrofits of existing equipment could avoid stranded investment and provide cost-effective, feasible, emission reduction solutions. This measure carries an incentives price tag of $450 million, and SoCalGas supports the development of VIPs that are SIP-creditable and meet the quantifiable, surplus, enforceable, and permanent criteria.[8] We also support SCAQMD's efforts to explore additional solutions for incentives, including reduced permitting fees, New Source Review and Emission Reduction Credit Incentives, as well as expedited California Environmental Quality Act review and other concepts.

56-11 Con't

[8] However, we note here that based on the "Preliminary Cost Summary of Draft 1016 AQMP Control Measures" provided at the Scientific, Technical and Modeling Peer Review Advisory Group Meeting on July 28, 2016, the VIP cost of CMB-01 is listed at $337.3 million. Has SCAQMD reconsidered the level of incentive funding available for this measure? What accounts for the more than $100 million fluctuation? *See* "Preliminary Cost Summary of Draft 1016 AQMP Control Measures," Agenda Item 2, SCAQMD Scientific, Technical & Modeling Peer Review Advisory Group (July 28, 2016), *available at*: http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=STMPRSocio_072816.

SoCalGas Comments on the Draft 2016 AQMP

Appendix 2

CMB-02: Emission Reductions from Commercial and Residential Space and Water Heating

I. Summary of the Control Measure

This measure seeks NOx emissions reductions from unregulated commercial space heating furnaces and reductions from incentive programs to replace older boilers, water heaters, space heating furnaces, and pool heaters with new low emission and more efficient units.

II. Proposed Method of Control

This measure includes a mix of regulatory and incentive-based methods of control. SCAQMD is proposing to continue to implement the existing Rule 1111 emission limit of NOx for residential space-heaters and to consider adopting a similar rule to regulate commercial heating units. Another component of this measure may be to require residential water heaters to meet the heat input based emission limits in Rules 1121 and 1146.2 to ensure that energy efficiency incentive programs for these residential appliances achieve NOx emission reductions. Additionally, this measure proposes to incentivize the voluntary replacement of older boilers, water heaters, space heaters, and pool heaters with currently available low NOx technologies.

III. Comments

A. Proposed Regulatory Measures

SoCalGas supports the development and deployment of low NOx residential and commercial space heaters, and residential water heaters. However, we urge caution when pursuing new commercial space heating emissions limits based on the existing Rule 1111 NOx emissions limits. Though the Rule 1111 NOx emissions limit (14 ng/J (20ppm)) for residential space heaters went into effect in 2015, manufacturers have yet to bring a product to market. Citing reliability, durability, and serious safety concerns, the Air-Conditioning, Heating, and Refrigeration Institute and furnace manufacturers have asked for reconsideration and leniency from the Rule 1111 limits and mitigation fee program. SoCalGas strongly recommends that SCAQMD work closely with industry to resolve these design and safety issues before proposing similar mandatory emission limits on commercial-size space heating equipment. To that end, we would welcome the opportunity to partner with SCAQMD to provide funding support for the research, development, and longer-term field demonstration of viable, low NOx space heating products. 56-12

Further, SoCalGas cautions that, before eliminating the heat output based emission limits for water and space heating equipment, SCAQMD should consult with manufacturers to gain a better understanding of the costs for equipment redesign and safety recertification. Such a change in regulatory direction could impose a significant burden on manufacturers who have been subject to constantly changing emissions limits.

B. Incentives Programs

SoCalGas supports the development of an incentive program that is designed to take advantage of existing energy efficiency programs targeting higher efficiency water and condensing gas space-heating products. Any incentive program developed by SCAQMD should

provide funding for both high efficiency, low emission gas and solar technologies and should be fuel neutral without emphasizing electric alternatives over gas options. We are committed to introducing new, low NOx water and space heaters into the marketplace and would offer our assistance to SCAQMD on how to best use incentive funding to augment existing energy efficiency programs. We also would welcome partnerships to create new programs to incentivize the replacement of older, higher-emitting units.

56-12 Con't

SoCalGas Comments on the Draft 2016 AQMP

Appendix 3

CMB-03: Emission Reductions from Non-Refinery Flares

I. Summary of the Control Measure

This proposed control measure seeks reductions of NOx and VOC from gas handling at non-refinery sources including organic liquid loading stations, tank farms, oil and gas production facilities, landfills, and wastewater treatment facilities.

II. Proposed Method of Control

CMB-03 consists of two levels of control: 1) beneficial use of waste gas that would typically be flared by directing it to equipment that can convert or clean the gas into an acceptable renewable energy source; 2) the installation of new low NOx flares implementing Best Available Control Technology (BACT).

III. Comments

A. Beneficial Use of Waste Gas Provides a Pathway to Reduce Both Stationary and Mobile Source Emissions

SoCalGas strongly supports SCAQMD's proposal to develop a pathway for the beneficial use of waste gas. By diverting biogas from flares, and then conditioning and utilizing the waste gas as a transportation fuel or injecting into a natural gas pipeline, SCAQMD has a unique opportunity to reduce emissions from both stationary and mobile sources. Pipeline injection is a win-win scenario as it both minimizes combustion emissions and decarbonizes the natural gas supply, thereby realizing greenhouse gas (GHG) reduction co-benefits and contributing to the Low Carbon Fuel Standard (LCFS) and Renewable Fuel Standard (RFS) goals. 56-13

Currently, the allowable emission rate from biogas engine-driven electrical generation is much higher than the allowable rate from power plants and other engines, especially new engine-driven electric generation.[1] Rather than being disposed via combustion, this waste gas would be much better utilized in the transportation sector as a source of Renewable Natural Gas (RNG). As SCAQMD is well-aware, in 2015, Cummins Westport Inc. certified the world's first heavy-duty engine at near-zero emission levels – 90 percent below the existing federal standard, and certified to meet ARB's lowest-tier optional low-NOx emission standard at 0.02 g/bhp-hr NOx. The tailpipe emissions of heavy-duty vehicles running on these engines are as low as emissions associated with generating the electricity used to charge heavy-duty battery-electric vehicles (BEVs) with a state of the art generation plant. And, when fueled with RNG, the lowest carbon

[1] Current (and future) allowable emission rates for biogas fueled engine-driven electrical generation in the South Coast Air Basin can be found in SCAQMD Rule 1110.2(d)(1)(C). Currently, most biogas engines must meet 36 ppmvd NOx and 40 (landfill gas) or 250 (digester gas) ppmvd VOCs. On January 1, 2017, the emission limits for all biogas engines become 11 ppmvd NOx and 30 ppmvd VOC. Existing engine systems already must meet the 2017 biogas emission standards and new engine-driven electric generation must meet much more stringent emission limits. *See* SCAQMD Rule 1110.2(d)(1)(L).

intensity transportation fuel, near-zero emission natural gas trucks can provide a pathway to meet both the federal ozone standard and the State's climate change goals.[2]

ARB is currently requiring RNG use for all near-zero emission natural gas trucks under the incentive programs being proposed, a commendable and attainable goal under today's market conditions, and consistent with the integrated planning approach for GHG and criteria pollutant reductions. Because of the linkage created by these interconnected State and local incentive programs (i.e. near-zero emission natural gas trucks receiving incentives must use RNG), there will be significantly more demand for RNG production. The approach proposed in this control measure will directly support the State's other objectives, while identifying another NOx reduction benefit associated with the use of biogas or RNG. Further, this control measure has the potential to complement SCAQMD's "Petition to EPA for Rulemaking to Adopt Ultra-Low NOx Exhaust Emission Standards for On-Road Heavy-Duty Trucks and Engines" and would provide a clear pathway to support the development of the RNG market for use in low NOx heavy-duty trucks throughout the South Coast Air Basin.

56-13 Con't

B. Further Information is Needed to Accurately Represent Control Costs

The draft proposed control measure currently approximates a control cost of $20,000 per ton of NOx reduced. SoCalGas is concerned that this does not adequately account for the costs of pipeline interconnects. In order for this technology to be successfully demonstrated and deployed, we encourage SCAQMD to consider incentivizing facility upgrades to allow the waste water treatment and landfill industries to overcome cost barriers currently inhibiting pipeline interconnects. To that end, SoCalGas looks forward to continued discussions and participation in a working group to further explore biogas opportunities.

[2] RNG-fueled near-zero emissions heavy-duty engines provide 80 percent or greater significant GHG emissions reductions. "Game Changer Technical White Paper: Next Generation Heavy-Duty Natural Gas Engines Fueled by Renewable Natural Gas" (May 3, 2016), Figure 4, *available at:* http://ngvgamechanger.com/pdfs/GameChanger_FullReport.pdf.

SoCalGas Comments on the Draft 2016 AQMP

Appendix 4

CMB-04: Emission Reductions from Restaurant Burners and Residential Cooking

I. Summary of the Control Measure

This measure seeks NOx emissions reductions from residences, retail restaurants, and quick service restaurants utilizing commercial cooking ovens, ranges, fryers, and charbroilers through the development, installation, and use of low NOx burner technologies.

II. Proposed Method of Control

SCAQMD proposes to achieve a 50 percent reduction in NOx emissions by 2031 from residential and commercial cooking operations through existing energy efficiency programs, new incentives programs, and potential regulatory approaches.

III. Comments

SoCalGas appreciates the opportunity to partner with the SCAQMD to promote the development, commercialization, and installation of high-efficiency, low-emissions gas-fired cooking equipment. We have committed to co-fund a study profiling the NOx emissions of various types of cooking equipment so as to provide an informed pathway for identifying and targeting the highest-emitting equipment that will be the most cost-effective and feasible to replace. An accurate equipment emissions inventory is a critical first step for this control measure.

56-14

While we are supportive of a pragmatic, incentives-based approach to achieve emissions reductions in the cooking sector, we caution that there will be significant hurdles to overcome. Residential and commercial cooking equipment (other than certain types of charbroilers) have never been regulated – neither in the South Coast Air Basin, nor in any other jurisdiction. There are numerous challenges to reducing NOx emissions from cooking equipment and we encourage the SCAQMD to work closely with the North American Association of Food Equipment Manufacturers, equipment manufacturers, and the commercial food service industry.

Redesigning cooking equipment will be a significant undertaking for manufacturers as this control measure could potentially impact many models and types of highly specialized cooking equipment with unique applications, processes, and product requirements. Manufacturers have limited resources to redesign different types of equipment for a myriad of uses. And, there is currently no known technical burner solution to reduce NOx from residential or commercial ranges. Developing more efficient burners that combust less fuel, with correspondingly lower NOx emissions should be also considered. SoCalGas recommends that incentive programs and potential future regulations should focus on equipment with the highest NOx reduction potential from point of sale to provide business certainty and direction so that manufacturers can invest their limited resources effectively.

Moreover, targeting residential cooking equipment is likely not cost-effective. This equipment is very low-use, with an hour or less of active burner use per day.[1] Further, many of

[1] Only seven percent of residential fuel use is for cooking (about 31 therms per year or about 0.086 therms per day – 8,630 Btu per day). Range tops commonly have multiple burners with varying inputs. Small burners for simmer-type cooking are rated at around 5,000 Btu per hr, standard burners are rated at about 9,000 to 12,000 Btu per hr, and

SoCalGas' residential customers are economically challenged and would likely not be able to afford increased equipment costs without significant financial assistance. Alternatively, initiatives to encourage home energy conservation could effectively reduce residential cooking emissions.

We are also concerned that, per SCAQMD's "Preliminary Cost Summary of Draft 2016 Control Measures," this measure has the highest Annual Amortized Average cost ($118.9 milion) of all of the stationary source measures. Based on the table provided at the Scientific, Technical and Modeling Peer Review Advisory Group Meeting on July 28, 2016, nearly 80 percent of the costs associated with CMB-04 are attributed to compliance costs, not incentive costs.[2] This directly conflicts with Staff's statements that the control strategy will focus on incentive programs, not command and control regulations. SoCalGas strongly encourages SCAQMD to reconsider shifting the allocation of costs towards incentives for this measure.

Prelimnary Cost Summary of Draft 2016 AQMP Control Measures

	Present Value of Compliance Cost (2017) $MM		Present Value of Incentives (2017) $MM		Present Worth Value (2017) $MM	Amortized Annual Average (2017-2031) $MM
SCAQMD Stationary Source Measures						
BCM-01 (Commercial Cooking)	$163.0	+	$0.0	=	$163.0	$17.0
BCM-10 (Greenwaste Composting)	$18.4	+	$0.0	=	$18.4	$1.7
CMB-03 (Non-Refinery Flares)	$36.3	+	$0.0	=	$36.3	$2.2
CMB-02 (Space and Water Heating)	$1,891.4	+	$327.7	=	$2,219.1	$99.0
CMB-04 (Restaurant Burners and Residential Cooking)	$1,552.7	+	$388.2	=	$1,940.9	$118.9
CTS-01 (Coatings, Solvents, Adhesives, and Lubricants)	$59.0	+	$0.0	=	$59.0	$5.4
ECC-03 (Building Energy Efficiency)	$1,553.4	+	$313.5	=	$1,866.9	$103.4
CMB-01 (Transition to Zero & Near-Zero Emission Technologies)	$515.8	+	$337.3	=	$853.1	$34.8
CMB-05 (RECLAIM)	$837.8	+	$0.0	=	$837.8	$19.3
FUG-01 (Leak Detection and Repair)	$11.5	+	$0.0	=	$11.5	$1.0
Total for SCAQMD Stationary Source Measures	**$6,639.3**	+	**$1,366.6**	=	**$8,005.9**	**$402.6**

56-14 Con't

SoCalGas remains hopeful that with further study, inventory refinement, and funding initiatives, the South Coast Air Basin will benefit from emissions reductions from the cooking sector. SoCalGas welcomes the opportunity to continue to participate in a cooking industry working group, to co-fund an emissions inventory study, to co-fund an equipment research and development program, and to maximize funding for existing energy efficiency programs. We also recommend that this group be expanded to include cooking operators that are non-profits, or run by local governments, such as cafeterias at hospitals, schools, and universities. We look forward to continued collaboration with SCAQMD on this measure and to study, develop, and demonstrate new, low NOx burner technologies for commercial applications in restaurant operations.

large high input burners are rated at about 15,000 to 20,000 Btu per hr. *See* "California Statewide Residential Appliance Saturation Study," California Energy Commission, Energy Commission Publication No. CEC-400-04-009 (June 2004), *available at:* http://www.energy.ca.gov/HERS/rulemaking/documents/docs_relied_upon.html.

[2] "Preliminary Cost Summary of Draft 1016 AQMP Control Measures," Agenda Item 2, SCAQMD Scientific, Technical & Modeling Peer Review Advisory Group (July 28, 2016), *available at*: http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=STMPRSocio_072816.

SoCalGas Comments on the Draft 2016 AQMP

Appendix 5

FUG-01: Improved Leak Detection and Repair

I. Summary of the Control Measure

This proposed control measure would reduce VOC emissions from a variety of emission sources, including but not limited to, oil and gas production facilities, storage and transfer facilities, and other sources where fugitive emissions occur from piping components, wastewater system components, and process and storage equipment.

II. Proposed Method of Control

Phase 1: Pilot Smart LDAR Program

The Pilot Program will demonstrate feasibility of new Smart leak detection and repair (LDAR) technology and establish implementation protocols. The goal of the Pilot Program will be to identify facilities and industries already subject to LDAR programs and to assess whether Smart LDAR could be utilized.

Phase II: Amend Fugitive VOC Rules

Based on the results of Phase I, SCAQMD fugitive VOC rules including Rules 462, 463, 1142, 1148.1, 1173, 1176, and 1178 may be amended to include the use of new detection technology.

III. Comments

A. Cost-Effectiveness

56-15

SoCalGas supports the use of optical gas imaging technology where cost-effective and feasible. For example, using Smart LDAR during Rule 463 inspections on tanks could be an effective use of the technology. During the Phase I Pilot Program, SoCalGas could share information regarding our on-the-ground experience with Smart LDAR, including certain limitations of the gas-imaging technology, and difficulties implementing in the field.

This control strategy relies upon adding new Smart LDAR requirements, as well as self-inspection programs, additional work practices, and record-keeping and reporting requirements. All of these new mandates will require new capital investments, maintenance costs, and increased labor costs. The proposed measure approximates a cost-effectiveness figure of $11,000 per ton of VOC reduced, but provides no detail as to how this figure was derived, and what data was used to support the cost analysis. SoCalGas requests an explanation for the current cost analysis and that a more robust analysis including labor and ancillary costs be conducted.

SoCalGas estimates that the LDAR provisions in the California Air Resources Board's (ARB's) Proposed Regulation on Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities (Proposed Regulation) will cost upwards of $36 million annually statewide (using a global warming potential (GWP) 72 for methane). During our review of the Proposed Regulation, SoCalGas found that ARB appeared to under-estimate the costs of the LDAR provisions by a factor of three or more due to omitted costs such as labor and ancillary

equipment.[1] A summary comparing the ARB and SoCalGas economic analysis of LDAR is provided below, and a detailed description of the calculations are provided in Attachment 5A.[2]

Table 1. Summary of ARB Economic Analysis (EA) and SoCalGas EA Cost-Effectiveness Calculations for the Proposed Rule LDAR Provisions.

Parameter	ARB EA (Quarterly, GWP = 72)	ARB EA (Quarterly, GWP = 72) Corrected	SCGas EA (Quarterly, GWP = 72)	SCGas EA (Quarterly, GWP = 21)	SCGas EA (Annual, GWP = 72)	SCGas EA (Annual, GWP = 21)
Cost of LDAR Program [$ / yr]	$10,182,299	$9,646,628	$36,870,175	$36,870,175	$9,485,109	$9,485,109
Baseline (Uncontrolled) Methane Emissions [mt CH4 / yr]	13,650	13,805	11,351	11,351	11,351	11,351
Global Warming Potential [mt CO2e / mt CH4]	72	72	72	21	72	21
Annual Emissions Reductions from LDAR	60%	60%	90%	90%	80%	80%
Estimated Emission Reductions (mt CO2e / yr)	589,680	596,376	735,545	214,534	653,818	190,697
Annual Value of Gas Saved [$ / yr]	$1,547,683	$1,565,257	$889,045	$889,045	$790,262	$790,262
Cost per Metric Ton [$/mt CO2e]	**$17.27**	**$16.18**	**$50.13**	**$171.86**	**$14.51**	**$49.74**
Cost per Metric Ton with Gas Savings [$ /mt CO2e]	**$14.64**	**$13.55**	**$48.92**	**$167.72**	**$13.30**	**$45.60**

56-15 Con't

While SoCalGas welcomes the use of advanced technology, especially when it is more efficient than Method 21, SCAQMD must carefully consider the entire range of costs – capital investment, labor, and maintenance – before promulgating regulatory mandates.

[1] "SoCalGas and SDG&E Comments on Proposed Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities," (July 18, 2016), p.3, *available at*: http://www.arb.ca.gov/lists/com-attach/20-oilandgas2016-B3RUMVOyBQIRJFUx.pdf

[2] While comparing the cost-effectiveness of ARB's Proposed Regulation seeking methane emission reductions to SCAQMD's control measure focused on VOC reductions is not an apples-to-apples comparison, we provide our economic analysis of the Proposed Regulation as included in our July 18, 2016 comment letter to ARB to illustrate the need to comprehensively evaluate cost-effectiveness with consideration of labor and ancillary equipment costs. *See* Attachment 5A.

B. Avoiding Regulatory Duplication

ARB's Proposed Regulation is focused on reducing methane emissions; however, it also has VOC reduction co-benefits. ARB estimates a reduction of 1,152,000 metric tons of carbon dioxide equivalent (using GWP 72 for methane), which equates to about 320 metric tons of VOC per year. ARB also estimates a fugitive emission savings of about 220,000 metric tons of carbon dioxide equivalent, or 44 metric tons of VOC per year (0.12 tons per day). These fugitive emissions reductions estimated by ARB are very minimal. In contrast, this proposed control measure estimates a savings of 2 tons per day of VOC through Smart LDAR and other regulatory requirements. SoCalGas seeks clarification as to how SCAQMD plans to achieve these emissions reductions. Also, are these reductions mainly attributed to the petroleum industry?

56-15 Con't

Additionally, SoCalGas respectfully requests that as the SCAQMD seeks to amend its Rules to require Smart LDAR and associated maintenance and recordkeeping requirements, it also carefully balances the need for additional, duplicative regulation. ARB's Oil & Gas Rule will likely be adopted in February 2017, with implementation beginning in 2018. SCAQMD should work to minimize regulatory duplication and align any future rule amendments with existing state and federal requirements.

ATTACHMENT 5A
Excerpt from July 18, 2016 SoCalGas and SDG&E Comment Letter to CARB

Attachment B: Review of Appendix B "Economic Analysis" to the CARB Staff Report

Overview

Appendix B of the Economic Analysis of the Proposed Regulation significantly underestimates the costs of implementing the Proposed Rule storage facility monitoring provisions. This appears to be the result of flaws in some of the data and assumptions that form the basis of the Economic Analysis. As set forth in the attached cover letter, SoCalGas and SDG&E recommend that ARB delay the adoption of these rules to give stakeholders and experts more time to provide necessary input—particularly with respect to costs and technical feasibility.

SoCalGas offers our assistance in providing information to improve the basic understanding of the affected emission sources. As an introduction, a brief review of the CARB EA of the proposed rule Well Stimulation provision is illustrative

Well Stimulation Provision

The Economic Analysis estimates that six separator/incinerator control systems will be sufficient to control emissions from 1,200 well stimulation activities per year. This equates to 200 well stimulations per year (or about four per week) for each control system. The Economic Analysis does not cite a specific source for the underlying data or assumptions to support this estimation. SoCalGas encourages ARB to consider adjusting the Economic Analysis to take into account the following:

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First, discussion with production personnel estimates full compliance with this rule provision would likely require at least twelve full-time control systems. Well stimulation treatments typically require one to three days to complete. Assuming an average of two days per well stimulation treatment, and considering real-world scheduling delays (*e.g.*, schedule changes due to mechanical and other problems, unexpected well issues, inclement weather, control equipment downtime for maintenance, etc.), a minimum of twelve, as opposed to six, full-time control systems would be required.

Second, the Economic Analysis should be revised to take into account the following anticipated costs, which currently are missing from the estimate:

- transporting the separator/incinerator control systems from site to site. At a minimum, a heavy duty trailer and large towing (*e.g.*, tractor-trailer) truck would need to be purchased and dedicated to each control system;
- ancillary equipment including pipes, hoses, connectors, tools, etc.;
- operating labor. At least one full time person would be required to drive each truck and operate each control system. Additional personnel would be required to set up and break-down the equipment at each site (e.g., connect pipes and hoses);
- travel costs including per diem for the operator and truck fuel;
- disruption / delay of well stimulation activities due to implementation of the control requirements;
- control system maintenance labor and spare parts; and
- management and scheduling.

Moreover, the cost estimate assumes the control systems will have ten-year lifetimes, but do not cite the basis for the underlying assumption that equipment that is in continuous use and transported on a trailer over oil-field roads for ten years will remain functional for at least ten years. SoCalGas does not believe this is a realistic assumption.

In addition, the cost estimate does not consider the GHG and other pollutant emissions from operating the control equipment (*e.g.*, combustion emissions from the incinerator and separator heater, gas leaks from separator components) and driving the tractor-trailer truck.

In sum, the ARB analysis assumed that the control equipment is purchased and that this transaction is all that is required. There were no costs for any labor or transportation or ancillary equipment, and a lack of accounting for the facility labor and ancillary equipment required to implement the proposed rule control practices and technologies is a consistent trend throughout the ARB economic analyses.

Additional assistance and feedback can be provided, but the comment schedule does not allow the ability to develop detailed comments and alternatives for all affected sources. Similar examples of erroneous or questionable assumptions and analysis are available for other sources affected by the proposed rule. For these reasons, SoCalGas urges ARB to delay implementation in order to obtain additional input from stakeholders and experts.

The following review of the ARB proposed rule LDAR provisions demonstrates that ARB has overestimated the cost-effectiveness of the LDAR provisions by a factor of three or more.

Leak Detection and Repair Estimates

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The Economic Analysis for the proposed rule LDAR provisions appears to under-estimate the cost-per-metric-ton of CO_2e emissions controlled by a factor of about three, as summarized in Table 1. In addition to a direct comparison with the CARB LDAR costs, Table 1 presents SoCalGas LDAR cost-effectiveness estimates based on several assumptions, as discussed below.

- The second column lists the CARB Economic Analysis cost and emissions data for quarterly LDAR as presented in Appendix B "Economic Analysis" to the CARB Staff Report: Initial Statement of Reasons (ISOR).
- The third column lists the CARB Economic Analysis cost and emissions data for quarterly LDAR with identified corrections to the CARB calculations (identified in Attachment A and Attachment B)
- The fourth column lists the SoCalGas Economic Analysis cost and emissions data for quarterly LDAR, and the SoCalGas cost per metric ton reduction estimates are about three times greater than the CARB cost per metric ton reduction estimates. Note that SoCalGas estimates higher annual emissions reductions from LDAR than CARB (90% vs. 60%). This reduction estimate is based on measured leak reduction data and is discussed in Comment 10 of Attachment A.
  - For comparison, the fifth column lists the SoCalGas Economic Analysis cost and emissions data for quarterly LDAR using the 100-year Global Warming Potential (GWP) for methane of 21, and these SoCalGas cost per metric ton reduction estimates are about an order of magnitude greater than the CARB cost per metric ton reduction estimates. The CARB EA used a 20-year GWP for methane of 72 whereas SoCalGas believes the standard 100-year GWP for methane of 21 is more appropriate. The many reasons that the 100-year GWP is more appropriate for this analysis are presented in SoCalGas and SDG&E Comments on Revised Draft Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities.[1]

[1] SoCalGas and SDG&E Comments on Revised Draft Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities, February 18, 2016.

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- The sixth column lists the SoCalGas Economic Analysis cost and emissions data for annual LDAR, and these are about the same magnitude as the CARB cost per metric ton reduction estimates. Note that SoCalGas estimates higher annual emissions reductions from annual LDAR than CARB estimates from quarterly LDAR (80% vs. 60%). This reduction estimate is based on measured leak reduction data and is discussed in Comment 10 of Attachment A.
  - For comparison, the seventh column lists the SoCalGas Economic Analysis cost and emissions data for annual LDAR using the more appropriate 100-year GWP for methane of 21 as discussed above, and the SoCalGas cost per metric ton estimates are about 3 times greater than the CARB cost per metric ton reduction estimates.

The data in Table 1 demonstrate that annual, rather than quarterly, LDAR is expected to exceed the target Estimated Emission Reductions at a cost-effectiveness level deemed acceptable by the CARB Economic Analysis.

Table 1. Summary of CARB EA and SoCalGas EA Cost-Effectiveness Calculations for the Proposed Rule LDAR Provisions.*

Parameter	CARB EA (Quarterly, GWP = 72)	CARB EA (Quarterly, GWP = 72) Corrected	SCGas EA (Quarterly, GWP = 72)	SCGas EA (Quarterly, GWP = 21)	SCGas EA (Annual, GWP = 72)	SCGas EA (Annual, GWP = 21)
Cost of LDAR Program [$ / yr]	$10,182,299	$9,646,628	$36,870,175	$36,870,175	$9,485,109	$9,485,109
Baseline (Uncontrolled) Methane Emissions [mt CH4 / yr]	13,650	13,805	11,351	11,351	11,351	11,351
Global Warming Potential [mt CO2e / mt CH4]	72	72	72	21	72	21
Annual Emissions Reductions from LDAR	60%	60%	90%	90%	80%	80%
Estimated Emission Reductions (mt CO2e / yr)	589,680	596,376	735,545	214,534	653,818	190,697
Annual Value of Gas Saved [$ / yr]	$1,547,683	$1,565,257	$889,045	$889,045	$790,262	$790,262
Cost per Metric Ton [$ / mt CO2e]	$17.27	$16.18	$50.13	$171.86	$14.51	$49.74
Cost per Metric Ton with Gas Savings [$ / mt CO2e]	$14.64	$13.55	$48.92	$167.72	$13.30	$45.60

* Attachment A and Attachment B detail the calculations and data used to develop Table 1.

As summarized in Table 1, the CARB EA severely under-estimates the cost per metric ton of CO2e emission reductions. The primary reasons for the under-estimation include:

- CARB over-estimated the baseline/uncontrolled methane leak emissions. The uncontrolled methane leak emissions listed in Table B-9 of the CARB EA are based on total hydrocarbon (THC) emission

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factors from a CAPCOA document[2], and CARB assumed that 100% of the THC was methane rather than considering that transmission and storage natural gas contains about 95% methane by volume (about 93% methane by weight) and production and processing natural gas contains about 78.8% methane by volume (about 60% methane by weight). In addition, several of the emission factors in Table B-9 were incorrectly copied from the CAPCOA document. These errors combined to over-estimate methane emissions by about 20%.

- CARB relied upon discussions with LDAR contractors for LDAR surveys cost information, and these contractors have a very strong incentive to provide lowest possible implementation costs because promulgation of quarterly LDAR requirements would be very beneficial to their business. LDAR implementation costs provided in the most recent economic analysis published by ICF International (ICF 2016)[3] are more than twice the average rate provided by the LDAR contractors, and these were used for the SoCalGas EA. Based on the text on page B-36 of the CARB EA and discussion of "person year", it is not clear that CARB staff understand that the industry standard practice is two person survey teams, both for safety reasons and to record data including number of components inspected as required by the proposed rule.
- The CARB EA did not include any costs for facility personnel to support the LDAR surveys including training, scheduling, safety orientation, survey team escort and support, leak repair, etc. SoCalGas experience is that that one FTE will be required to support the LDAR project per year.
- SoCalGas experience is that the CARB EA recordkeeping and reporting estimates are about an order of magnitude too low. These tasks include collecting and tracking daily LDAR data (including leaks found and follow-up repair and verification measurements), audio-visual inspection requirements at unmanned sites, data QA checks (e.g., compare daily LDAR data to final reports), and report assembly and review.
- The CARB EA assumed that the facilities financially benefit from the gas savings; however, transmission and storage facilities do not own the gas they transport and storage and do not benefit economically from LDAR gas savings. This is commonly acknowledged in literature on methane reduction programs from EPA and others.
- The CARB EA valued gas savings at $3.44 per Mcf which is considerably higher than current spot prices for natural gas.
- The CARB EA used a 5% discount rate based on Cal/EPA guidelines and the rationale that "five percent is the average of what the US Office of Management and Budget recommends (7 percent) and what US Environmental Protection Agency has used historically for regulatory analysis." However, EPA used a 7% discount rate for the technical support document for the recently promulgated New Source Performance Standards for the oil and gas industry (40 CFR 60, subpart OOOOa)[4] and the CARB EA-cited ICF document (ICF 2014) employs a 10% discount rate. Thus, the CARB EA 5 percent discount rate is not supported by pertinent documents and the SoCalGas EA used a conservative discount rate of 7%.

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Other deficiencies and flaws noted in the CARB EA include:

[2] CAPCOA, ARB. 1999. The California Air Resources Board Staff California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities.

[3] ICF 2016. "Economic Analysis of Methane Reduction Potential from Natural Gas Systems," ICF International, May 2016

[4] EPA-HQ-OAR-2010-0505-5120. Background Technical Support Document for the Proposed New Source Performance Standards 40 CFR 60, subpart OOOOa, August 2015.

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- The calculation of "Cost per Ton with Savings" on page B-41 is incorrect.
- Engineering units are frequently incorrect (e.g., the units for the Conversion Factor of 836.2 should be scf/kg-mole rather than kg/kg-mole as listed on page B-40).
- Table B-9 of the CARB EA lists 1,318,700 components to survey, but page B-35 calculates a total of 1,339,185 that includes 20,485 well casings at heavy oil facilities and 939 compressors * 11 components per compressor, and this total is used to calculate the survey team years. Thus, the CARB EA total component basis for compliance costs (1,339,185) differs from the CARB EA total component basis for emission estimates (1,318,700) and is a flaw in the analysis. Further, the 1,339,185 component total is flawed because:
  - The 20,485 well casings at heavy oil facilities do not require quarterly LDAR, they require measurement of "the natural gas flow rate from the well casing vent annually by direct measurement" [§95668(h)(1)]; thus, the well casings should not be included in the LDAR components total.
    - An additional deficiency in the CARB EA is that an economic analysis for the proposed rule well casings provision is not provided.
  - Compressors (and the associated drivers) typically have many more than 11 components. Table W-1B to Subpart W of Part 98 lists a total of 259 components per compressor in the production segment to be used for GHG emissions reporting. Larger compressors employed in transmission and storage would be expected to have a higher total component count.

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Finally, it is notable that the CARB EA states,

> "the capital cost of larger repairs is not included based upon the assumption that these repairs would need to be made regardless of an LDAR program; because ***the operator would repair these parts regardless of the LDAR program [emphasis added]***"

And

> "Emissions were estimated using emission factors from CAPCOA guidelines (CAPCOA, 1999), which also accounted for 'super leaker' components. These are components that leak at a rate several times the rate of what is expected from a typical component, and make up the majority of emissions. Several studies that have reported measurements of CH_4 emissions from natural gas production sites share a common observation-the existence of skewed emissions distributions, where a small number of sites or facilities account for a large proportion of emissions."

These two statements suggest that the majority of gas leak emissions would be controlled regardless of the implementation of an LDAR program. This simple assumption is very compelling and casts doubt on the need for and viability of the proposed rule LDAR provision.

SoCalGas Comments on the Draft 2016 AQMP

Appendix 6

BCM-01: Further Emission Reductions From Commercial Cooking

I. Summary of the Control Measure and Proposed Method of Control

BCM-01 seeks particulate matter (PM) reductions from commercial under-fired charbroilers. The intent of the measure is to establish a tiered program targeting higher efficiency controls for under-fired charbroilers at large volume restaurants and more affordable, lower efficiency controls at smaller restaurants.

II. Comments

SCAQMD has proposed charbroiler control measures in the past and concluded that such measures would be infeasible due to an inability to identify cost-effective controls. Accordingly, SoCalGas supports SCAQMD's efforts to conduct the requisite testing and studies before promulgating requirements to address under-fired charbroiler emissions. We encourage SCAQMD to identify the total costs for control systems by not only taking into account the cost of control devices, but also by considering the costs of installation, operation, maintenance, and labor. The Center for Environmental Research and Technology (CE-CERT) at the University of California, Riverside is currently compiling a technical and cost feasibility analysis to guide future regulation of PM emissions from under-fired charbroilers. SoCalGas urges SCAQMD to narrowly tailor any future proposed regulations using such cost and feasibility analyses. 56-17

SoCalGas also notes that the Draft AQMP states that "the NOx strategy to meet ozone standards will still ensure achieving the annual [PM2.5] standard by 2025."[1] Therefore, this measure may not even be necessary to attain the 2012 annual PM2.5 standard. And even if SCAQMD must pursue regulatory action to reduce direct PM emissions, the control of PM2.5 from wood-burning fireplaces has been demonstrated to be much more effective in the PM2.5 plan. SoCalGas' natural gas log replacement program has been very effective in reducing PM from fireplaces, and we offer our support to SCAQMD to continue our partnership on the firewood exchange program.

[1] Draft 2016 AQMP, Chapter 4, p. 4-38.

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Appendix 7

Mobile Source Measures

MOB-7: Accelerated Penetration of Partial Zero-Emission and Zero-Emission of Light-Heavy and Medium-Heavy-Duty Vehicles

MOB-8: Accelerated Retirement of Older On-Road Heavy-Duty Vehicles

I. Summary of the Control Measures and Methods of Control

MOB-07 seeks additional emissions reductions through the continuation of the State Hybrid Truck and Bus Voucher Incentive Program (HVIP).

MOB-08 seeks additional emission reductions from on-road heavy-duty vehicles beyond the emissions reductions targeted in California Air Resources Board's (ARB) Truck and Bus Regulation.

II. Comments

SoCalGas enthusiastically endorses these Mobile Source Measures, as we believe they provide the fastest and most effective ways to improve air quality in our region. As stated in the Draft 2016 AQMP Appendix IV-A, "[e]missions from heavy-duty diesel mobile sources continue to represent a significant and increasing portion of the emissions inventory in the Basin, adversely affecting regional air quality."[1] Reducing emissions from heavy-duty diesel mobile sources is an urgent air quality and public health priority for the entire region. And, by focusing on upgrading the existing population of heavy-duty trucks operating in the South Coast Air Basin (Basin), critical mobile source emissions reductions can be achieved in the near-term in a cost-effective manner. 56-18

A. Incentive Funding for Low NOx Heavy-Duty Trucks Can Provide Immediate Air Quality Impacts

The Draft AQMP notes that a near-zero, 8.9 liter low-NOx engine already exists for the light-heavy sector. "[T]here is currently one natural gas engine certified to the 0.02 g/bhp-hr optional NOx exhaust emissions standard. (For purposes of this measure, the term "near-zero" is used for engines meeting the 0.02 g/bhp-hr level.)"[2] MOB-07 specifically recommends HVIP funding of $15,000 per vehicle for near-zero vehicles.[3] SoCalGas understands that this incentive could be raised by ARB in the next few months to $18,000, and possibly to as much as $25,000 per vehicle. We strongly support SCAQMD's collaboration with ARB on these efforts. The inclusion of the highest incentive funding level possible is critical to offset the cost of purchasing a new near-zero natural gas heavy-duty vehicle. SoCalGas believes such incentives will have direct and immediate impacts to improve air quality in the Basin.

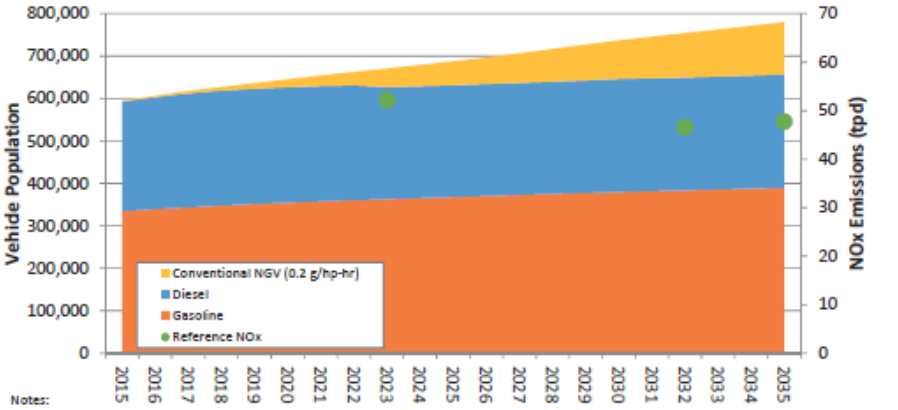
Further, while MOB-07 seems to place priority on the early introduction of electric hybrid vehicles and zero-emission medium-heavy-duty vehicles in the Basin, SoCalGas reminds SCAQMD that a federal revised low NOx standard of 0.02g/bhp-hr for heavy-duty vehicles is

[1] Draft 2016 AQMP, Appendix IV-A, p. IV-A-137.
[2] *Id.*
[3] *Id.* at p. IV-A-138.

technologically and commercially feasible because the "next generation" heavy-duty natural gas engine is now available for transit bus, refuse, school bus, and medium-duty truck applications. Additional near-zero emission heavy-duty natural gas engines are expected to follow by 2018, addressing a wider array of medium- and heavy-duty on-road applications.[4] While we support a robust marketplace of vehicle options, we also remind SCAQMD that near-zero emission vehicles provide an economically viable and commercially feasible long-term emissions reduction solution.

SoCalGas has conducted significant research into the efficacy of investing in near-zero natural gas heavy-duty trucks to help local air districts meet air quality and other goals.[5] Below shows the penetration of natural gas trucks into the Basin based upon market forces at the current NOx emission rate of 0.2 grams of NOx per brake horsepower hour.

Figure 1.



Notes:
1. Analysis includes T7 Drayage, T7 Single, T7 Solid Waste Collection Vehicle, T7 Tractor, T7 Tractor Construction, T7 Agriculture, T7 Single Constructio T7 Public, T7 Utility, T7 IS, T6 Instate Heavy, T6 Instate Small, T6 Utility, T6 Public, T6 TS, T6 Agriculture, T6 Instate Construction Heavy, T6 Instate Construction Small, LHDDT, and LHDGT.
2. Vehicle population is based on the EMFAC2011 data for the South Coast Air Basin.

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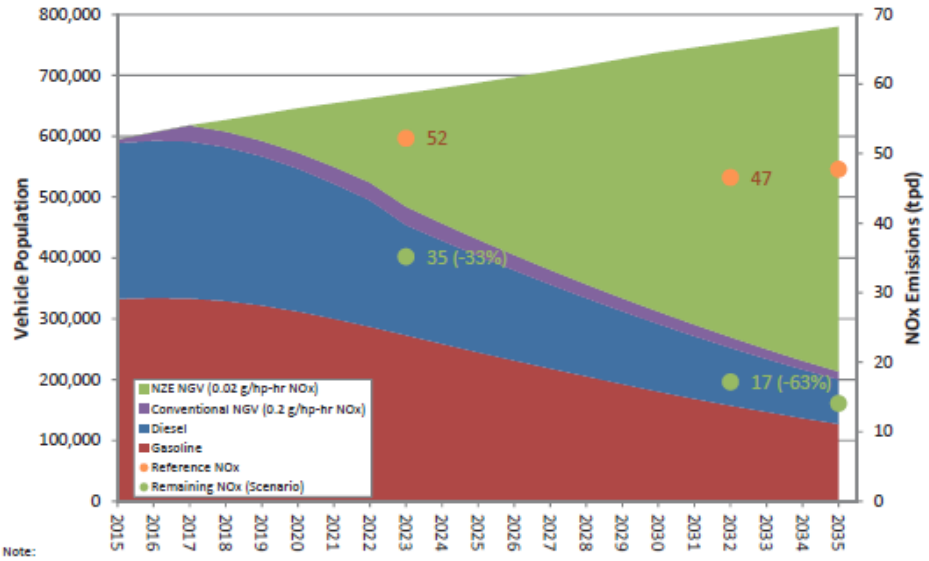
If we look a little further into the future – two years at most – we believe a 12 liter heavy-duty natural gas engine that would produce 90 percent less NOx per brake power hour, at 0.02 grams, will be commercially available. Engines that size could support near-zero NOx heavy-duty trucks used for drayage and long hauls common in the freight sector. If purchases of such near-zero NOx natural gas trucks were supported by incentive funds, market penetration of the trucks would be expedited, leading to a 33 percent NOx emission reduction by 2023 and 63 percent NOx emission reductions by 2031 in the Basin alone.

[4] "Petition to EPA for Rulemaking to Adopt Ultra-Low NOx Exhaust Emission Standards for On-Road Heavy-Duty Trucks and Engines," (SCAQMD) pp. 24-26 (June 2016), *available at*: http://www.aqmd.gov/docs/default-source/default-document-library/news-docs/nox-petition-to-epa-june-2016.pdf?Status=Temp&sfvrsn=2.
[5] For further discussion and full explanation of assumptions for these Figures, please see "Near-Zero Emission (NOx) Natural Gas Truck Opportunities in the South Coast Air Basin," Environ International Corporation (December 2014), included as Attachment 7A to these comments.

SoCalGas Comments on the Draft 2016 AQMP

Figure 2.



Note:
1. Analysis includes T7 Drayage, T7 Single, T7 Solid Waste Collection Vehicle, T7 Tractor, T7 Tractor Construction, T7 Agriculture, T7 Single Construction, T7 Public, T7 Utility, T7 IS, T6 Instate Heavy, T6 Instate Small, T6 Utility, T6 Public, T6 TS, T6 Agriculture, T6 Instate Construction Heavy, T6 Instate Construction Small, LHDDT, and LHDGT.
2. Maximum incentives range from $15,300 - $35,000/Truck depending on the vehicle type and engine size.
3. Assumed penetration rates after the incentive period ends remain at the 2023 level due to some mechanism.

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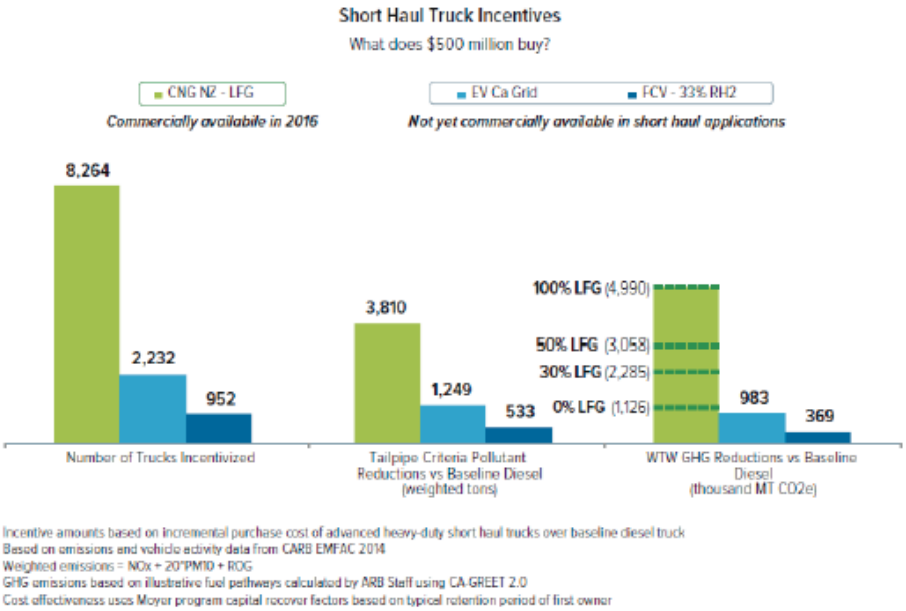
As discussed at length in the *Game Changer Technical Whitepaper* by Gladstein, Neandross and Associates, upgrading these traditional heavy-duty trucks with advanced near-zero emission natural gas vehicles can provide a cost-effective solution to help meet our air quality goals in the near term.

Figure 3 below demonstrates the relative impact that incentives supporting heavy-duty natural gas vehicles can have compared to alternative choices (which may not be available for several decades).[6] For example, providing incentives for near-zero emission heavy-duty natural gas vehicles fueled with renewable natural gas (RNG) can have three times the NOx emissions reduction and five times the "well-to-wheels" GHG reduction benefits as the next best alternative. Additionally, growing the demand for RNG as a vehicle fuel for Southern California's goods movement sector will promote the development of RNG production facilities, which often present an opportunity to maximize co-benefits by mitigating biogas combustion and reducing atmospheric emissions of methane. Coupled with the near-term availability of this technology, these leveraged impacts make supporting the adoption of heavy-duty natural gas vehicles through the AQMP a clear choice.

[6] "Game Changer Technical White Paper: Next Generation Heavy-Duty Natural Gas Engines Fueled by Renewable Natural Gas" (May 3, 2016), Figure 4, *available at:* http://ngvgamechanger.com/pdfs/GameChanger_FullReport.pdf.

SoCalGas Comments on the Draft 2016 AQMP

Figure 3.



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B. SoCalGas Supports Other Actions to Facilitate the Transition to Near-Zero Heavy-Duty Trucks

In addition to incentive funding, the AQMP contemplates a suite of other strategies to spur modernization of the fleet of heavy-duty on-road vehicles serving the South Coast Air Basin. In its discussion of MOB-08, SCAQMD suggests a variety of measures, ranging from preferential access to marine ports and warehouses for near-zero trucks to a provision similar to the Surplus Off-Road Option for NOx (SOON) program for the largest on-road truck fleets in the region.[7] SCAQMD states that its "staff will convene a stakeholders working group" to evaluate the efficacy of such options that could be implemented to reduce emissions from on-road heavy-duty trucks.[8] SoCalGas respectfully and formally requests to be included in the stakeholders working group to offer its expertise and insight on the near-zero natural gas heavy-duty vehicle market and how robust market development is critical for the future of clean air in the Basin.

[7] Draft 2016 AQMP, Appendix IV-A, p. IV-A-143.
[8] *Id.*

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ATTACHMENT 7A

Near-Zero Emission (NOx) Natural Gas Truck Opportunities in the South Coast Air Basin

56-19

Prepared for:
Southern California Gas Company
Los Angeles, California

Prepared by:
ENVIRON International Corporation
Los Angeles, California

Date:
December 2014

Project Number:
048505K Phase K06

Southern California Gas Company
A Sempra Energy utility

gna GLADSTEIN, NEANDROSS & ASSOCIATES

ENVIRON

Contents

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1 Introduction, Background, Purpose

This is a companion to the evaluation of near-zero nitrogen oxide (NOx) emission ("NZE") natural gas ("NG") trucks, also referred to as advanced NG trucks. ENVIRON has been evaluating the effectiveness of trucking sector financial incentives on the adoption rate of advanced natural gas engine technologies that can achieve a NOx emission rate of 0.02 g/bhphr, which is 90% lower than the current, most stringent on-road truck emission standards. The geographic boundary of this analysis is the South Coast Air Basin("Basin"). These results are a part of a larger effort to examine near-zero NOx natural gas opportunities in the entire mobile source inventory.

The US Environmental Protection Agency ("USEPA") requires the Basin to meet the 80 ppb ozone National Ambient Air Quality Standard (NAAQS) by 2023, which requires NOx emissions to be reduced below 115 tons/day. Current air quality regulations are predicted to bring NOx emissions down to just under 330 tons/day in that timeframe; thus, NOx emissions must be reduced approximately 65% beyond current regulations. Furthermore, EPA adoption of the more stringent 75 ppb ozone NAAQS requires that the Basin bring NOx emissions below 80 tons/day by 2032, or 75% beyond 2023 levels given current regulations. Seventy-eight percent of NOx emissions in the Basin are mobile sources of which 21% are heavy-duty trucks.

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This analysis is based upon a pure economic justification for the adoption of natural gas technologies in the heavy-duty trucking sector through the use of the Future of Transportation Fuels economic decision model published by the National Petroleum Council in 2012 ("FTF Model"). The analysis segments heavy-duty (HD) trucks by gross vehicle weight rating categories (Light HD (14,000 – 26,000lbs), Medium HD (26,000lbs – 33,000 lbs) and Heavy HD (>33,000 lbs)). Two scenarios were modeled, "SoCalGasRef," a reference case that predicts the likely, natural, adoption of natural gas as a fuel in this sector, and "SoCalGasHigh," a maximum case which predicts the most aggressive adoption rate of natural gas technologies. Differences between these scenarios are described in the next section.

Finally, financial incentives are applied to each of the modeling cases. Incentives are applied in two tiers. The first tier incentives are designed to boost the adoption rate of conventional natural gas technologies, which from a regulatory perspective, have the same emissions as conventional diesel technologies. Second-tier financial incentives are designed to change the purchase of a conventional natural gas technology truck to an advanced, NZE natural gas truck. The first tier incentives and second-tier incentives were applied together in both the SoCalGasRef and the SoCalGasHigh incentive cases.

The analysis results presented include the truck fleet population impacts, NOx emission benefits, total financial incentive program cost and programmatic cost-effectiveness.

2 Economic Modeling

The Heavy-Duty Truck component of the FTF Model predicts the rate at which various fuel technologies will be adopted by the trucking industry between now and 2050. The model predicts the percentage of conventional truck sales (diesel/gasoline) vs. the alternative fuel (natural gas in this case) on an annual basis. These percentage sales values are then applied to vehicle populations predicted by the California Air Resources Board's (CARB) motor vehicle emission model, EMFAC 2011. Basic assumptions of the modeling runs include the following:

- The model assumes NG truck sales begin in 2007 and run through 2050;
- The approximate incremental cost of an NG truck over diesel starts at $65k in 2015 and drops to $47k in 2023;
- Three market adoption curves choices are, "conservative," "moderate" and "aggressive," which are based on an American Trucking Association (ATA) owner survey regarding tolerance to payback for investment. The aggressive curve is closely aligned with the actual ATA survey respondent preferences on payback;
- The consumer begins with a preference towards diesel, but by 2050 is indifferent between diesel and natural gas (preference factor); and
- Fuel prices are based on EIA Annual Energy Outlook 2010 Reference case x 150%; the FTF Model relies on the EIA Annual Energy Outlook, without adjustment.

The incremental cost of alternative fuel technologies is one of the most influential factors on the model results. The vehicle price assumptions used in this analysis are presented in Table 1.

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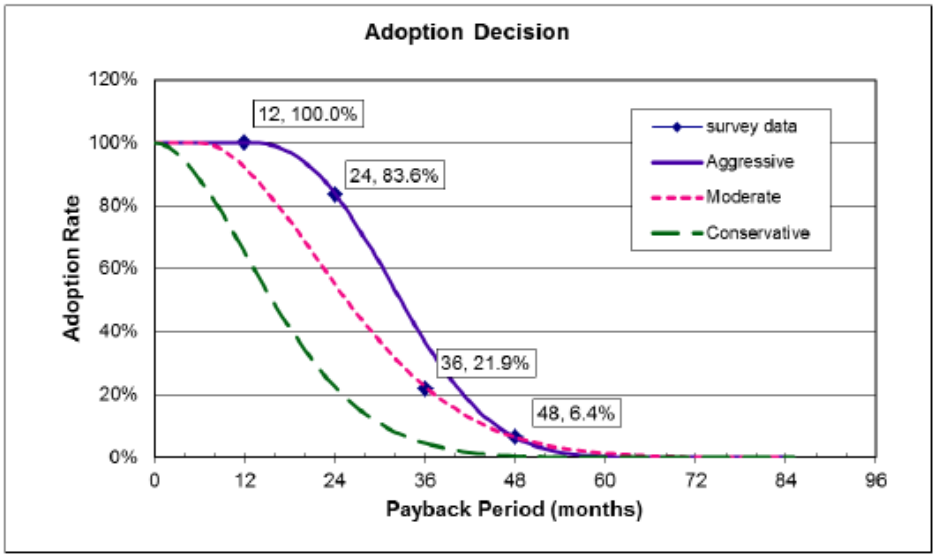
Table 1. SoCalGas FTF Model runs technology pricing assumptions, diesel base cost & incremental natural gas truck incremental price above diesel.

Truck Group	2023 Base Diesel Vehicle Cost	NG Incremental Price in 2023	
		SoCalGas Reference	SoCalGas High
Heavy HD Combination	$144,953	$47,355	$30,028
Heavy HD Single	$ 190,399	$18,906	$7,463
Drayage	$144,953	$34,604	$18,399
Refuse	$190,399	$18,906	$7,463
Light & Medium HD	$61,529	$21,165	$15,682

Another variable that was adjusted to develop the SoCalGasRef and SoCalGasHigh penetration curves is the NGV Adoption Curve. The technology adoption curves make up the core of the FTF Model and are based on surveys of American Trucking Association (ATA) members regarding their purchasing behaviors and various economic scenarios including fuel pricing and

expected return on investment in these alternative fuel technologies. The survey results were then compiled into adoption curves that indicate the rate at which alternative fuel technologies compete with diesel and gasoline. The FTF Model has three settings for these, "aggressive," "moderate" and "conservative."[1] Note that the aggressive curve is based on the actual ATA survey results, therefore the Moderate and Conservative curves are somewhat more conservative than the actual ATA survey responses. The SoCalGasHigh case is based on the Aggressive NGV adoption curve (the real world survey results of the trucking industry), therefore the SoCalGasRef case, based on the Moderate Adoption Curve, is more conservative than the real world survey results of the trucking industry.

Figure 1: Incentives Modeling NGV Technology Adoption Curves– Payback Period.



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The model also has a "Preference Factor" variable that is indicative of the market's preference for conventional fuels (diesel/gasoline) against the alternative fuel, in this case, natural gas. The scenarios modeled in this exercise assume that truck purchasers are initially wholly biased towards conventional fuels (i.e., 100% bias to conventional, 0% bias to natural gas), but by the end year of the scenario (2050), are indifferent to conventional fuels over natural gas (i.e., 50% bias to conventional fuel, 50% bias to natural gas). These settings allow 100% penetration of natural gas truck sales into the market under the proper conditions. This differs from the FTF Model default settings, which artificially limit the maximum market penetration of natural gas to

[1] The "aggressive" setting is indicative of a fleet consumer that has a higher tolerance to longer payback (50% of respondents indicated that they would accept a 33 month payback of the additional cost of the Natural Gas fueled truck due to fuel cost savings). The "moderate" setting consumer would accept a shorter payback period than the aggressive setting (28 months) and the "conservative" setting consumer would expect a still shorter payback period (16 months).-

50% of new sales by setting the "preference factor" such that there is always a bias against NG Trucks.

Specific to fuel pricing, both the SoCalGasRef and SoCalGasHigh modeling scenarios assume that natural gas fuel pricing is 1.5x the Energy Information Administration's (EIA) Annual Energy Outlook (AEO) 2010 natural gas pricing. Natural gas fuel price forecasts are scaled due to the relatively low NG pump price assumed in AEO2010 and are an effort to provide pump prices that are more representative of current (2013) average pricing. The FTF Model default fuel price projection is based directly on AEO2010 data, which are likely based on fueling information for a fleet that involved a greater percentage of transit bus, refuse, and other large, time-fill station applications. As more fleets adopt natural gas, it is predicted that more fuel will be dispensed through smaller stations, fast-fill stations, and/or in a retail setting, contributing to a higher dispensed price than the AEO2010 projections.

2.1 NOx NZE Natural Gas Engine Technologies

This analysis is predicated on the assumption that natural gas engine technologies capable of achieving NOx emission rates at a 0.02 g NOx/bhphr certification level in the 8.9L and 15L sizes are commercially available in 2018. This is based on feedback from the natural gas engine manufacturer, Cummins Westport.

2.2 NOx & Greenhouse Gas (GHG) Emission Modeling

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The FTF model output of percent new vehicle sales based on model year and fuel type are apportioned to the CARB EMFAC 2011 emission model fleet population. Information on vehicles miles travelled (VMT) by truck type (e.g., light-, medium-, and heavy-heavy duty truck) and truck usage (e.g., drayage, construction, refuse collection, utility service, etc.) is included in EMFAC 2011. Those sectors/truck types with the highest VMT per truck would maximize potential NOx emission reductions per truck using advanced technology NZE engines, increasing the effectiveness of financial incentives for such trucks/trucking sectors.

This analysis makes a blanket assumption that conventional natural gas engines certified to a 0.2 g/bhphr NOx standard will be commercially available in 2015, and starting in 2018, NZE natural gas engines certified to a 0.02 g/bhphr NOx emission standard are made commercially available. Emissions are quantified by vehicle size and type and then summed to provide a total Basin NOx impact. The difference between the default EMFAC emission prediction and SoCalGasRef and SoCalGasHigh NZE natural gas scenarios represent the modeled NOx reductions.

GHG emissions are modeled by application of CARB's GHG natural gas potency factor to the predicted volume of natural gas consumed. Natural gas fuel consumption is calculated from the volume of gasoline and diesel fuel displaced and application of an efficiency loss factor.

3 Financial Incentives Scenarios

The two scenarios modeled are SoCalGas Reference and SoCalGas High.

- SoCalGas Reference assumes: (1) a high price differential between NGV and Diesel Trucks; and (2) uses the conservative NGV adoption curve;
- SoCalGas High assumes: (1) a low price differential between NGV and Diesel Trucks; and (2) uses the aggressive NGV adoption curve

Each of these two scenarios are presented as a base case ("Base Case"), representing the modeled, natural adoption rate of NG technologies given the economic market conditions assumed, and a financial incentive scenario case ("Incentive Case") where incentive funding is offered to encourage the adoption of NZE natural gas technologies. For the Incentive Case runs, financial incentives are applied in two levels; Incentive 1 encourages additional natural gas technology adoption by depressing the cost of natural gas technology engine and Incentive 2 is applied to convert all conventional natural gas truck sales to near zero natural gas technology, which is defined as 0.02 g NOx/bhp-hr.

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- Financial Incentive 1 to accelerate conventional NG truck adoption[2]
  - $25,000 for Class 8 Truck Tractors and Class 8 Drayage Trucks
  - $15,000 for Class 4 through 8 Straight and Solid Waste Collection Trucks ($7,500 in the high penetration rate case)
- Financial Incentives 2 to influence NZE natural gas technology adoption (0.02 g/bhp-hr NZE NG truck technology vs. 0.2 g/bhp-hr conventional NG truck technology)[3]
  - $10,000 for Class 8 Tractors
  - $8,000 for Class 4 – 8 Straight Trucks

The financial incentives are assumed to be direct grants to qualifying vehicle purchasers. More sophisticated forms of incentives that have been used in the past were not investigated. It is likely that other incentive programs can be used which will result in equal or greater penetration, at lower total costs. A partnership among appropriate government agencies and others with more experience in these types of programs is recommended for vetting these issues.

3.1 SoCalGas Reference Scenario Results

The results of the SoCalGas Reference scenario runs are presented in Figures 2, 3, and 4. Figure 2 is the SoCalGas Reference Base Case. The area chart is a representation of the total

[2] The $25,000 and $15,000 incentives were based on estimated 2015 price differentials discussed in Section 2. For example, the larger trucks have a $65k price differential in 2015. Program incentives can be refined based on updated price information for vehicles and the incentive program objectives.
[3] The $8,000 - $10,000 price estimates for "financial incentive 2" were based on the original cost indicated by a natural gas engine manufacturer however the same manufacturer revised this cost estimate to $4,000 - $5,000 in more recent, subsequent discussions. These more recent updated values for financial incentive 2 were not modeled.

population of heavy-duty trucks registered in the South Coast Air Basin, predicted in the years 2015 – 2035, stratified by fuel type (gasoline-red, diesel-blue and natural gas-purple) and is

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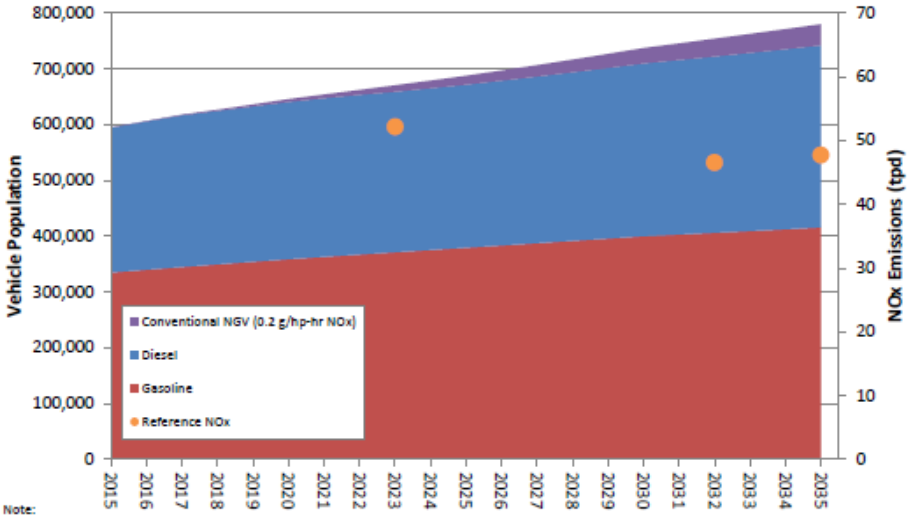
Figure 2: SoCalGas Reference- Base Case Scenario.



Note:
1. Analysis includes T7 Drayage, T7 Single, T7 Solid Waste Collection Vehicle, T7 Tractor, T7 Tractor Construction, T7 Agriculture, T7 Single Construction, T7 Public, T7 Utility, T7 IS, T6 Instate Heavy, T6 Instate Small, T6 Utility, T6 Public, T6 TS, T6 Agriculture, T6 Instate Construction Heavy, T6 Instate Construction Small, LHDDT, and LHDGT.
2. Vehicle population is based on the EMFAC2011 data for the South Coast Air Basin.
3. Reference NOx emissions were obtained from the 2012 Air Quality Management Plan (AQMP) from the SCAQMD.

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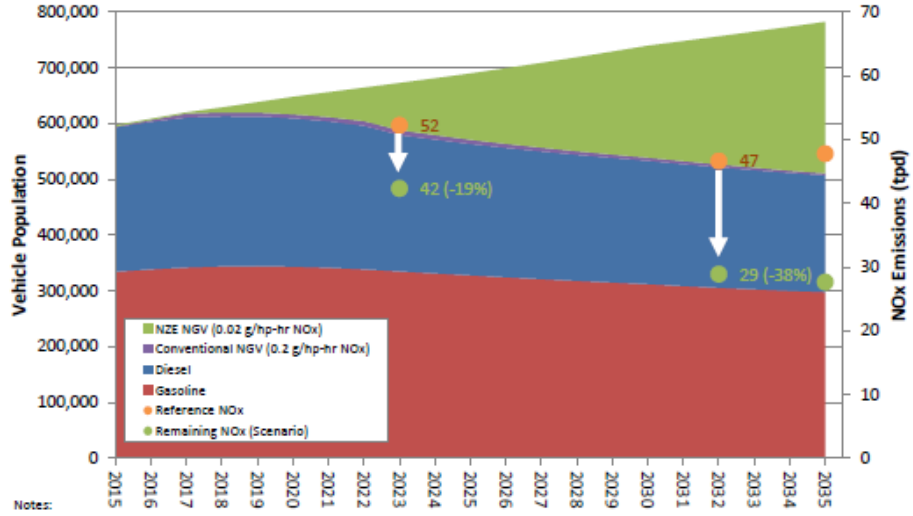
Figure 3: SoCalGas Reference Incentive Case.



Notes:
1. Analysis includes T7 Drayage, T7 Single, T7 Solid Waste Collection Vehicle, T7 Tractor, T7 Tractor Construction, T7 Agriculture, T7 Single Construction, T7 Public, T7 Utility, T7 IS, T6 Instate Heavy, T6 Instate Small, T6 Utility, T6 Public, T6 TS, T6 Agriculture, T6 Instate Construction Heavy, T6 Instate Construction Small, LHDDT, and LHDGT.
2. Maximum incentives range from $23,000 - $35,000/Truck depending on the vehicle type and engine size.
3. Assumed penetration rates after the incentive period ends remain at the 2023 level due to some mechanism.

associated with the primary y-axis (to the left). No incentive is applied in Figure 2. The three orange dots represent daily NOx emissions associated with the fleet population in the year indicated (2023, 2032 and 2035) and are associated with the second y-axis (to the right). These NOx emission values are the reference against which all scenarios are compared.

This case assumes three differences from the Reference Base Case:

1. A financial incentive for conventional (0.20 g NOx/bhp-hr) natural gas trucks is introduced in 2015 through 2023;
2. A financial incentive for the adoption of NZE NOx technology (0.02 g NOx/bhp-hr) is introduced starting in 2018 through 2023; and
3. A mechanism, yet to be defined, is introduced starting in 2023 to maintain the adoption rate of NZE NOx technology at 2023 levels.

The purple portion of the area chart represent the population of conventional natural gas vehicles introduced in period from 2015 – 2018. The green portion represents NZE natural gas vehicles introduced in the period from 2018 – 2035. The green dots represent the NOx emissions of the total fleet in the years indicated, and the orange dots represent the reference NOx emissions of the SoCalGas Reference Base Case (transcribed from Figure 2).

The incentive program yields daily NOx reductions of 19% and 38% in 2023 and 2032, respectively, at an incentive program cost of $2.05 billion. It is noted that a majority of these NOx reductions come from the heavy heavy-duty truck segment of the market at a cost of $660 million (Figure 4).

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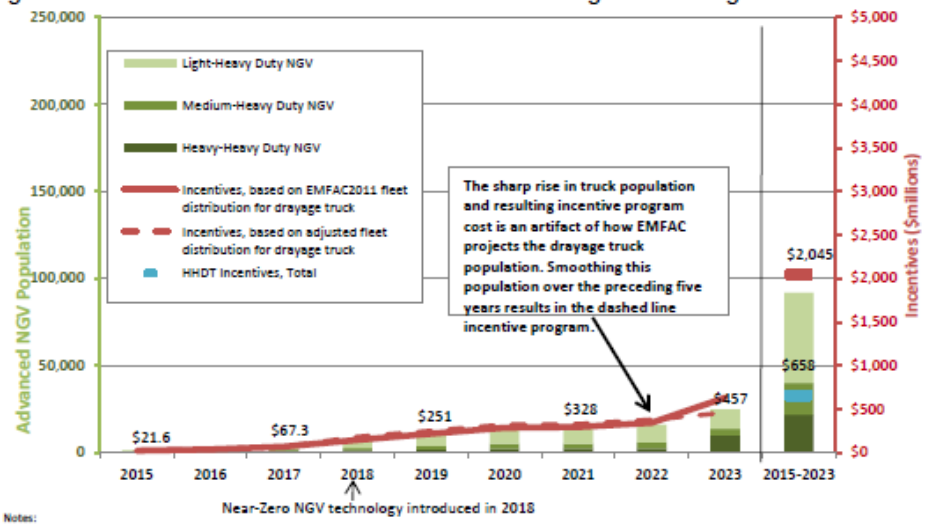
Figure 4: SoCalGas Reference Scenarios- Incentive Program Funding.



Notes:
1. Represents the funding needed to incentivize purchase of the new near-zero NG vehicle each year that would otherwise have been diesel if no incentives provided.
2. Analysis includes T7 Drayage, T7 Single, T7 Solid Waste Collection Vehicle, T7 Tractor, T7 Tractor Construction, T7 Agriculture, T7 Single Construction, T7 Public, T7 Utility, T7 IS, T6 Instate Heavy, T6 Instate Small, T6 Utility, T6 Public, T6 TS, T6 Agriculture, T6 Instate Construction Heavy, T6 Instate Construction Small, LHDDT, and LHDGT.
3. The last bars show the cumulative advanced NGV population and the total incentive dollars required during 2015 - 2023 under NPC high penetration scenario
4. The NGV new sales projection was derived from the NPC model based on the high adoption assumptions and the natural gas price at 1.5 times EIA 2010 forecast.

3.2 SoCalGas High Scenario Results

The results of the SoCalGas High scenario runs are presented in Figures 5, 6 and 7. The High Base Case scenario, Figure 5, shows significantly higher adoption rates of natural gas truck technologies (purple) than the Reference Base Case (Figure 2). However predicted NOx emissions are identical to those of the Reference Base Case as conventional natural gas engines are certified to the same emission rate as a comparable diesel or gasoline engine.

Figure 6 is the SoCalGas High Incentive Case. This case makes very similar financial incentive assumptions as the Reference Incentive Case, although the actual truck incentive funding amounts have been adjusted based on the higher underlying adoption rate of natural gas trucks. The purple portions of the area chart represent the population of conventional natural gas vehicles introduced in period from 2015 – 2018. The green portion represents NZE natural gas vehicles introduced in the period from 2018– 2035. The green dots represent the NOx emissions of the total fleet in the years indicated, and the orange dots represent the reference NOx emissions of the SoCalGas Reference Base Case (transcribed from Figure 5). The incentive program yields daily NOx reductions of 33% and 63% in 2023 and 2032, respectively, at an incentive program cost of $4.3 billion. It is noted that a majority of these NOx reductions (9.6 tpd out of 17 tpd) come from the heavy heavy-duty truck segment of the market at a cost of $885 million (Figure 7).

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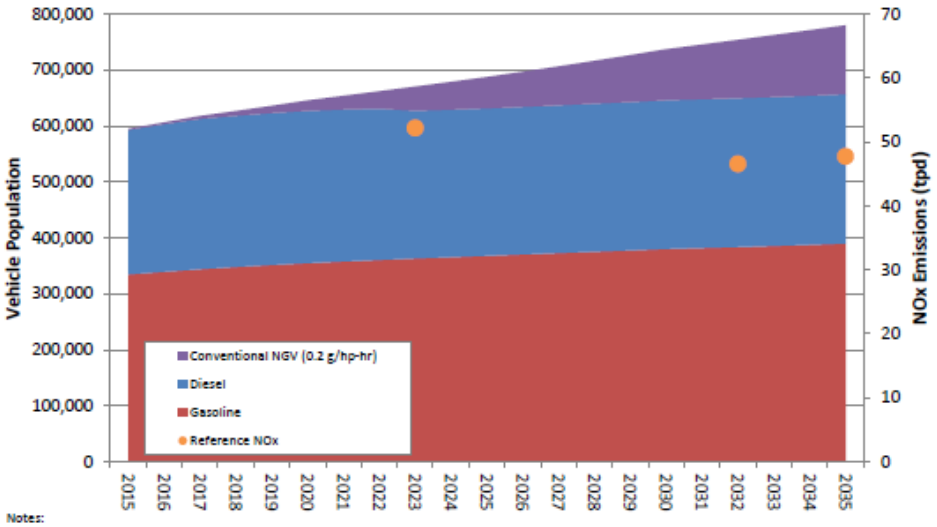
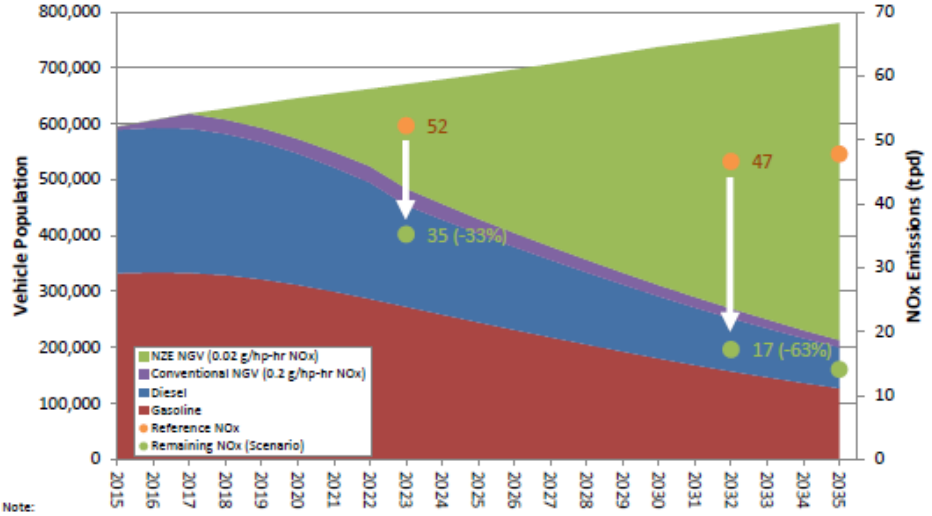
Figure 5: SoCalGas High- Base Case Scenario.



Notes:
1. Analysis includes T7 Drayage, T7 Single, T7 Solid Waste Collection Vehicle, T7 Tractor, T7 Tractor Construction, T7 Agriculture, T7 Single Construction, T7 Public, T7 Utility, T7 IS, T6 Instate Heavy, T6 Instate Small, T6 Utility, T6 Public, T6 TS, T6 Agriculture, T6 Instate Construction Heavy, T6 Instate Construction Small, LHDDT, and LHDGT.
2. Vehicle population is based on the EMFAC2011 data for the South Coast Air Basin.
3. Reference NOx emissions were obtained from the 2012 Air Quality Management Plan (AQMP) from the SCAQMD.

Figure 6: SoCalGas High- Incentive Case Scenario.



Note:
1. Analysis includes T7 Drayage, T7 Single, T7 Solid Waste Collection Vehicle, T7 Tractor, T7 Tractor Construction, T7 Agriculture, T7 Single Construction, T7 Public, T7 Utility, T7 IS, T6 Instate Heavy, T6 Instate Small, T6 Utility, T6 Public, T6 TS, T6 Agriculture, T6 Instate Construction Heavy, T6 Instate Construction Small, LHDDT, and LHDGT.
2. Maximum incentives range from $15,500 - $35,000/Truck depending on the vehicle type and engine size.
3. Assumed penetration rates after the incentive period ends remain at the 2023 level due to some mechanism.

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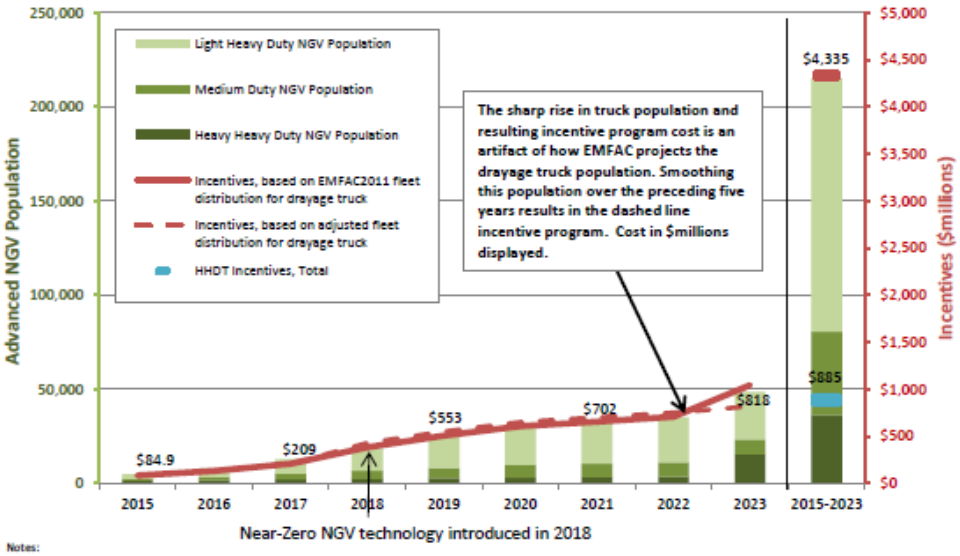
Figure 7: SoCalGas High- Incentive Program Funding.



Notes:
1. Represents the funding needed to incentivize purchase of the new near-zero NG vehicle each year that would otherwise have been diesel or gas if no incentives provided.
2. Analysis includes T7 Drayage, T7 Single, T7 Solid Waste Collection Vehicle, T7 Tractor, T7 Tractor Construction, T7 Agriculture, T7 Single Construction, T7 Public, T7 Utility, T7 IS, T6 Instate Heavy, T6 Instate Small, T6 Utility, T6 Public, T6 TS, T6 Agriculture, T6 Instate Construction Heavy, T6 Instate Construction Small, LHDDT, and LHDGT.
3. The last bars show the cumulative advanced NGV population and the total incentive dollars required during 2015 - 2023 under NPC high penetration scenario
4. The NGV new sales projection was derived from the NPC model based on the high adoption assumptions and the natural gas price at 1.5 times EIA 2010 forecast.

3.3 Cumulative Incentive Costs Compared to 2023 Emission Reductions

The cumulative cost of the incentives can be compared to the reductions that result from the incentives. The 2023 NOx reductions are compared to the cumulative cost of the incentives for each type of heavy-duty truck (light, medium, and heavy) for the SoCalGas High, maximum incentives scenario. The cumulative cost of the incentives for all heavy-duty trucks is $4,335M, resulting in a NOx reduction in 2023 of 17 tons/day. Over half of the 2023 NOx reductions (9.6 tons/day) result from only $885M (or 20%) of the cumulative cost of the incentives, for incentives given to heavy-heavy duty trucks only. Additional reductions can only be achieved at a much higher cumulative cost for incentives given to light- and medium-duty trucks per ton /day of NOx reduced (7.3 tons/day of NOx reductions in 2023 for a cumulative cost of $3,450M).

3.4 Greenhouse Gas Emissions Analysis

Lastly, the greenhouse gas (GHG) reductions for the maximum incentives scenario were analyzed. In Figure 9, the 2023 and 2035 GHG emission reductions are compared to the baseline emissions for each year. All SoCalGas maximum incentives scenarios show a decrease in GHG emissions compared to the current baseline of conventional diesel and gasoline in-state trucks. The results for each SoCalGas scenario include a range of GHG reductions that could further occur if natural gas from renewable sources (such as renewable natural gas from biomass or RNG) displaced fossil-fuel NG.

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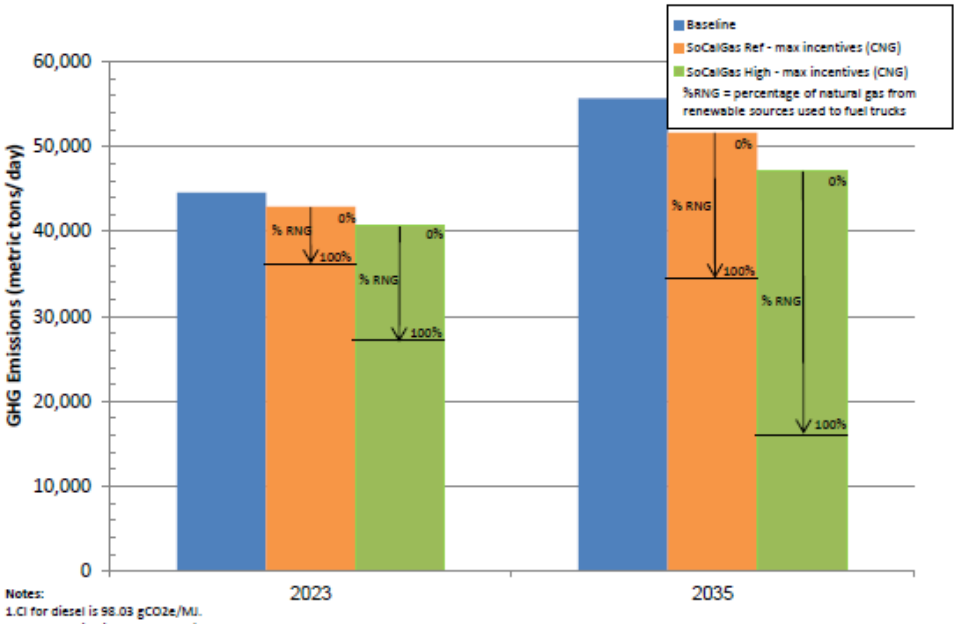
Figure 8: Greenhouse Gas Emission Reduction Analysis for In-State Trucks in the South Coast Air Basin (uses currently adopted climate intensity).



Notes:
1.CI for diesel is 98.03 gCO2e/MJ.
2.CI for gasoline is 98.83 gCO2e/MJ.
3.CI for renewable NG is 11.26 gCO2e/MJ based on landfill gas.
4.CI for CA pipeline CNG is 67.7 gCO2e/MJ.
5.Conventional natural gas assumes a fuel efficiency decrease of 10% when compared to diesel and equivalent fuel efficiency to gasoline.
6.Near zero natural gas assumes a fuel efficiency decrease of 15% when compared to diesel and a fuel efficiency decrease of 5% when compared to gasoline.

SoCalGas Comments on the Draft 2016 AQMP

Appendix 8

Chapter 10: Climate and Energy

I. Summary

In September 2011, the SCAQMD Governing Board adopted the "Air Quality-Related Energy Policy." The policy promoted zero and near-zero emission technologies through ultra clean energy strategies to meet air quality, energy security, and climate change objectives. Pursuant to the Policy, SCAQMD staff is required to prepare an update of energy usage within the District in each AQMP. Chapter 10 of the Draft 2016 AQMP addresses this obligation and focuses on:

- Climate change and the relationship to the AQMP;
- Regional energy and fuel information;
- Grid collaboration, renewable generation, demand response, energy efficiency and energy storage issues related to "Moving Towards 100 Percent Renewable Power;" and
- Transformation of the energy sector in the future in Southern California.

II. Comments

SoCalGas supports SCAQMD's efforts to address climate change co-benefits and proactively plan for a sustainable energy future. We offer the following comments to clarify and supplement the discussion in Chapter 10.

A. Methane's Role as a Precursor to Ozone

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Chapter 10 discusses methane's contributions to tropospheric ozone and the interactions between climate and criteria pollutants in the atmosphere:

> These interactions often worsen the impacts from greenhouse gases and increase background levels of criteria pollutants. While methane persists in the atmosphere for 10 to 14 years, its atmospheric lifetime is impacted by criteria pollutants (Prather, 2007). As methane reacts within the atmosphere, it acts like a VOC and increases background tropospheric ozone levels. Over the past 12 years, global methane emissions have increased over 30 percent, which also increased background levels of tropospheric ozone (Turner, 2016). Increasing background tropospheric ozone makes achieving air quality standards more difficult. Lastly, tropospheric ozone is also one of the strongest and significant short lived climate pollutants (Intergovernmental Panel on Climate Change [IPCC] AR5, 2013).[1]

It has been known since the 1970s that methane is an ozone precursor. However, its conversion to ozone formation at the scale of an area like the South Coast Basin is limited by methane's low reactivity. California State Implementation Plans (SIPs) have emphasized control of NOx and VOCs to address ozone. The definition of VOC has always excluded methane, because of its extremely low reactivity. Accordingly, throughout the history of California SIPs and AQMPs, we have known that local control of methane emissions will not contribute to attainment of ozone national ambient air quality standards (NAAQS) in the non-attainment area of origin.

[1] Draft 2016 AQMP, Chapter 10, p. 10-2.

For methane to form ozone it must first react in the atmosphere, but methane reacts extremely slowly. For illustration, methane that is emitted in Los Angeles, travelling across the U.S. under prevailing 15 mile per hour winds, would reach the Atlantic Ocean after 10 days, during which time less than one percent could react in the atmosphere. The significance is that there is virtually no ozone formation in the originating air basin, and less than one percent of the ozone forming potential of the emitted methane could even be realized before the emissions leave the U.S. to become part of the global background inventory.[2] It has been calculated that even if California eliminated its methane emissions, the greatest potential benefit would be less than 0.02 ppb, and that change would be across the globe and negligible in any U.S. nonattainment area.[3]

Because of the low reactivity of methane in the atmosphere, the traditional way of attaining ozone standards (i.e. controlling sources of emissions in the air basin) is not applicable to methane emissions. EPA has begun a serious investigation of the role of methane in global background ozone formation. But, we do not have to wait on EPA. Programs such as EPA's Natural Gas Star, of which SoCalGas was a founding participant, have already been very successful in reducing methane from the natural gas sector. And, ARB's Short Lived Climate Pollutant Plan, which SoCalGas also supports, lays out how to proceed to control methane from a climate change perspective.

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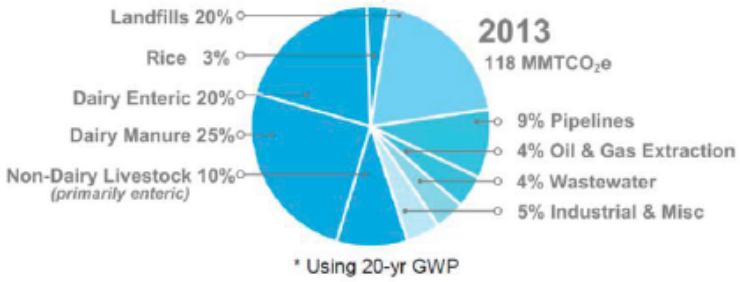
Further, it is important to note that approximately 80 percent of California methane emissions are from forestry, agriculture, livestock, and waste, and that total California methane emissions are a small fraction (<0.5%) of global methane emissions (over 20,000 $MMTCO_2e$ in 2010 (and growing), using the same 20-year global warming potential of 72).[4]

Figure 1. California 2013 Methane Emission Sources[5]



[2] Crutzen, Paul J. "Photochemical reactions initiated by and influencing ozone in unpolluted tropospheric air." Tellus 26, no. 1-2 (1974), pp. 47-57;
Crutzen, Paul J. "My life with O3, NOx, and other YZOx compounds (Nobel lecture)." Angewandte Chemie International Edition in English 35, no. 16 (1996), pp. 1758-1777.

[3] West, J. J. and Fiore, A. M., "Management of Tropospheric Ozone by Reducing Methane Emissions," Environ. Sci. Technol. (2005), pp. 4685–4691, DOI: 10.1021/es048629f

[4] "Global Anthropogenic Emissions of Non-CO2 Greenhouse Gases: 1990–2020," U.S. EPA, EPA Report 430-R-06-003 (June 2006), *available at:* https://www.epa.gov/global-mitigation-non-co2-ghg-report/global-anthropogenic-emissions-non-co2-greenhouse-gases-1990.

[5] "Proposed Short-Lived Climate Pollutant Reduction Strategy," ARB (April 11, 2016), p. 58, *available at*: http://www.arb.ca.gov/cc/shortlived/meetings/04112016/proposedstrategy.pdf.

B. Discussion About Advanced Energy Storage Technologies Should Consider the Role of Power-to-Gas

SoCalGas is actively pursuing research and development on the cost and readiness of Power-to-Gas in the South Coast Air Basin. Through a partnership with the National Fuel Cell Research Center at the University of California, Irvine, SoCalGas is investigating and testing the hydrogen blending necessary for commercial Power-to-Gas storage of excess wind and solar energy. Power-to-Gas has the potential to compliment the State's aggressive Renewable Portfolio Standard goals by:

- Making solar more affordable and reliable,
- Accelerating the development of more renewables projects in the state,
- Reducing congestion (and the associated service disruptions) on our electric grid,
- Generating clean hydrogen for fuel cells and alternative fuels, and
- Producing renewable biogas for use for heating homes, cooking and transportation.

Moreover, Power-to-Gas has been successfully developed and commercialized in Europe, with over 30 projects launched to date. For example, the first Power-to-Gas plant was installed in Falkenhagen, Germany in 2013 and successfully injects hydrogen into the natural gas grid. Another plant in Stuttgart, Germany utilizes waste carbon dioxide from a biogas plant, produces hydrogen from water with a PEM electrolyzer, and injects methane into the pipeline system. This technology is a reality and holds tremendous potential for California.

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Power-to-Gas also has benefits in addition to being an "alternative to curtailing excess renewable power," that are not mentioned in Chapter 10.[6] Power-to-Gas technologies allow for longer charge and discharge capacities compared to batteries. Conceptually, producing synthetic natural gas from electricity and then storing it on the pipeline or underground could allow for much larger amounts of energy storage than any battery system. In addition, using the natural gas pipeline system, stored energy can be moved more easily to where it is needed (vs. electricity which would be trapped in stationary batteries). Finally, Power-to-Gas also offers ancillary services. Electrolyzers and fuels cells have excellent response to electrical load changes and can provide support to the electrical grid.

C. Growing the Renewable Natural Gas Industry

i. Additional Sources of Renewable Natural Gas Feedstock

SoCalGas appreciates the discussion of biogas in Chapter 10. We would like to note that there are some additional sources of biogas worth adding to the AQMP, particularly in light of the California mandates to divert organics from landfills:

- Source Separated Organics (SSO) – These can include residential food waste and yard waste (e.g. grass clippings) that can be converted to biogas in a digester or through gasification.
- Municipal Solid Waste (MSW) – There are project developers working to separate the organic fraction from MSW and converting that fraction to gas.

[6]Draft 2016 AQMP, Chapter 10, p. 10-24.

- Food producers/distributors/retailers – The entire food supply chain is looking for ways to divert their organic wastes (fruit peels, unsold product, bruised tomatoes, etc.) from landfills.

Los Angeles County alone produced 21 million tons of solids waste in 2012, of which 32 percent was organic. So, the potential for biogas production is quite large. SCAQMD is exploring opportunities to promote the injection of biogas into the pipeline, and we support these efforts as they will provide pathways for the most efficient, beneficial use of the waste gas.

ii. Helping Grow the Renewable Fuels Industry

The policies being pursued in this AQMP as well as in ARB's Mobile Source Strategy can result in significant growth in both the renewable natural gas (RNG) industry and in the renewable diesel industry. Both fuel types offer GHG and NOx emissions reductions, and we urge policymakers to enact programs which will promote multiple choices for operators, with incentives appropriately aligned with performance in meeting emissions reduction goals. We recommend that the following points be considered when implementing renewable fuel policies:

- Renewable diesel has an important role in reducing GHG emissions and has also shown in testing that NOx emissions may be reduced when used as a replacement fuel in existing trucks, allowing the use of renewable diesel to be directly attributable to meeting the federal Clean Air Act criteria pollutant goals, as well as the State's climate change goals. (Note that ARB has committed to a reexamination of the earlier studies.)
- Near-zero emission natural gas trucks, when fueled with RNG, can also meet both the federal Clean Air Act attainment mandates, and help meet the State's climate change goals. For near-zero emission natural gas trucks, the dramatic 90 percent reduction in NOx emissions is the result of an advanced engine technology – which will deliver this emission reduction regardless of whether it is fueled with traditional natural gas, upgraded biogas, or RNG.
- ARB is currently requiring RNG use for all near-zero emission natural gas trucks under the incentive programs being proposed, a commendable and attainable goal under today's market conditions, which is consistent with the integrated planning approach for GHG and criteria pollutant reductions. Because of this linkage created by these incentive programs (i.e., near-zero emission natural gas trucks receiving incentives must use RNG) there will be significantly more demand for RNG production. As a result of these multiple requirements for near-zero emission trucks, more drastic air quality and environmental benefits will be achieved with this approach.
- ARB has also proposed a measure, "Low-Emission Diesel Requirement," to "require that diesel fuel providers sell steadily increasing volumes of low-emission diesel until it comprises 50 percent of total diesel sales by 2031."[7] We seek parity in the renewable fuels thresholds and note the disconnect between requiring 100 percent RNG for near-zero emission natural gas trucks, but only 50 percent renewable diesel. Further, the ARB measure would intersect with the existing proposed ARB measures for NOx emission reductions from near-zero emission natural gas trucks using RNG by establishing a state

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[7] "Mobile Source Strategy," California Air Resources Board (May 2016), p. 153, *available at*: http://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.pdf.

policy that could significantly bias the growth of the biofuels industry, essentially limiting innovation in the alternative fuels markets. As we all know, this industry needs support to grow, especially to reach production levels anticipated in these plans for both renewable diesel and RNG.

Because of this double emission reduction benefit (NOx and GHG) from both renewable diesel and RNG, policymakers should compare the varying outcomes of these policies and consider adopting incentives commensurate with the benefits achieved. There is a finite amount of investment funding available; therefore, it is critical to consider the implications of these policies on the growth and innovation of the nascent biofuels industry. SoCalGas urges SCAQMD and other policymakers to examine the respective renewable biofuels technology, costs, energy consumption, feedstock impacts, near and long term environmental benefits, and the impact on the direction of growth of the renewable fuels industry generally.

56-20 Con't

The Energy+Environmental Economics (E3) consulting firm has performed studies that evaluate some potential pathways to achieving the State's 2030 and 2050 environmental goals which can serve as a starting point for this examination. Last year E3 examined the impact of supplementing an "Electrification" scenario, with a "Low Carbon Gas" option, in order to improve the State's ability to reach its 2030 GHG goals.[8] We urge further consideration of the benefits of the low carbon gas scenario. E3 concluded that one of the critical differences between a 100 percent electrification compliance scenario and a scenario that includes a Low Carbon Gas option would be the choice of allocating biomass feedstock to the production of alternative fuels – namely bio and renewable diesel, and RNG. Fortunately, E3 also studied feedstock availability and found that less than 10 percent of the potential feedstock available nationally was necessary to produce the amount of RNG needed for their Low Carbon Gas option. However, due to the shared feedstock for the development of many biofuels, it is clear that it will be critically important to establish policies that do not unilaterally support the development of single biofuels in order to maintain cost-effective energy diversity and achieve our statewide environmental goals. Below is a table summarizing some of the results of the E3 study:

[8] "Decarbonizing Pipeline Gas to Help Meet California's Greenhouse Gas Reduction Goal," Energy+Environmental Economics (E3) (November 2014, released January 27, 2015) (available upon request).

SoCalGas Comments on the Draft 2016 AQMP

Table 1.

	2015	2030 CARB Mobile Source Strategy	2030 E3 Electrification	2030 E3 Low Carbon Gas
ZEVs[1/] (millions of vehicles)	0.1	5 - 7.3	9.3	9.3
CNG and LNG trucks and buses (millions of vehicles)	0.00003	0.400	0.037[4/]	0.359
Biogas (% of total gas system demand)	0%	3/	2%	30%[5/]
Renewable Diesel (% of total diesel demand)	2%[2/]	55%	67% - 85%	3%
Statewide GHG Reduction (% Reduction from 1990 Levels)	2%	**40%**	**40%**	**40%**

1/ Includes BEVs, PHEVs, and FCVs
2/ Estimated renewable diesel share in 2013, based on reported LCFS compliance
3/ Almost all renewable fuels are liquids. Some renewable gaseous fuel, tied to incentive requirements
4/ E3 Electrification Scenario includes approximately 320,000 hybrid diesel trucks in the Alternative Fuel HD Sector
5/ RNG transportation demand as a percent of total system demand is approximately 17% in 2030, and is approximately 30% in 2050 .

56-20 Con't

In addition, SoCalGas has also been examining the comparison in cost and energy use for producing various biofuels from this common feedstock, and should have additional data to inform this discussion shortly. We encourage SCAQMD as well as ARB, California Energy Commission, San Joaquin Valley Air Pollution Control District, and other stakeholders to consider potential outcomes of policies proposed in these plans on the growth and direction of the biofuels industry and the impacts on achieving our near- and long-term environmental goals.

As noted at the conclusion in Chapter 10, SCAQMD is looking to engage in conversations about the "schedule for infrastructure and technology needs."[9] SoCalGas looks forward to participating further in a biogas working group and partnering with the agency on future study and implementation of energy and transportation infrastructure initiatives.

[9] Draft 2016 AQMP, Chapter 10, p. 10-29.

SoCalGas
A Sempra Energy utility

ATTACHMENT A

George T. Minter
Regional Vice President
External Affairs & Environmental Strategy
Southern California Gas Company
555 W. 5th Street
Los Angeles, CA 90013

June 14, 2016

The Honorable Gina McCarthy, Administrator
United States Environmental Protection Agency
William Jefferson Clinton Federal Building
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460
McCarthy.Gina@epa.gov

RE: Support of Petition to EPA for Rulemaking to Adopt Ultra-Low NOx Exhaust Emission Standards for On-Road Heavy-Duty Trucks and Engines (dated June 3, 2016)

Dear Administrator McCarthy:

Southern California Gas Company (SoCalGas) submits this letter in support of the above-referenced Petition filed with EPA on June 3, 2016 by the South Coast Air Quality Management District (SCAQMD), *et al*. The attainment of the federal ozone standards is vitally important to those communities in which SoCalGas operates and provides natural gas service.

SCAQMD and the California Air Resources Board (CARB) have demonstrated that attainment of the 1997 and the 2008 8-hour ozone standards in the South Coast Air Basin will be unachievable without emissions reductions from a new, ultra-low heavy-duty engine exhaust emission standard for NOx. In the South Coast Air Basin, 88 percent of regional NOx emissions come from mobile sources within the basin, and on-road heavy duty diesel trucks are the largest categorical contributor.[1] CARB's Mobile Source Strategy demonstrates that implementation of all current rules will reduce NOx in the South Coast Air Basin by over 50 percent between 2015 and 2031, but that these reductions will not be sufficient to attain the ozone standards without a new federal, heavy-duty truck engine emission standard.[2]

As detailed in the Petition, a revised low NOx standard of 0.02g/bhp-hr is technologically and commercially feasible. In 2015, Cummins Westport Inc. certified the world's first heavy-duty engine at near-zero emission levels—90 percent below the existing federal standard, and certified to meet ARB's lowest-tier optional low-NOx emission standard. This "next generation" heavy-duty natural gas engine is now commercially available for transit bus, refuse, school bus, and medium-duty truck applications. Additional near-zero-emission heavy-duty natural gas engines are expected to follow by 2018, addressing a wider array of medium- and heavy-duty on-road applications.

[1] SCAQMD, "Petition to EPA for Rulemaking to Adopt Ultra-Low NOx Exhaust Emission Standards for On-Road Heavy-Duty Trucks and Engines," (hereafter "Petition") p.12 (June 2016).
[2] CARB, "Mobile Source Strategy," p.22, 83 (May 2016).

The tailpipe emissions of heavy-duty vehicles running on these engines are as low as emissions associated with generating the electricity used to charge heavy-duty battery-electric vehicles with a state of the art generation plant. When paired with renewable natural gas, which provides the lowest carbon intensity of any transportation fuel available today, this technology has the added benefit of providing significant greenhouse gas emissions reductions (80 percent or greater).

SoCalGas supports federal leadership to implement an ultra-low heavy-duty engine emission standard for NOx in order to achieve the necessary emission reductions for the South Coast Air Basin to attain federal ozone standards.

Respectfully submitted,

George Minter
Regional Vice President, External Affairs and Environmental Strategy

cc: Christopher Grundler, Director, Office of Transportation and Air Quality, EPA
Grundler.christopher@epa.gov

Wayne Nastri, Acting Executive Officer, SCAQMD
wnastri@aqmd.gov

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ATTACHMENT B

SoCalGas
A Sempra Energy utility

George I. Minter
Regional Vice President
External Affairs & Environmental Strategy
Southern California Gas Company
555 W. 5th Street
Los Angeles, CA 90013

August 5, 2016

The Honorable Gina McCarthy, Administrator
United States Environmental Protection Agency
William Jefferson Clinton Federal Building
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460
McCarthy.Gina@epa.gov

RE: Support of San Joaquin Valley Air Pollution Control District Petition to EPA for Rulemaking to Adopt Ultra-Low NOx Exhaust Emission Standards for On-Road Heavy-Duty Trucks and Engines (dated June 22, 2016)

Dear Administrator McCarthy:

Southern California Gas Company (SoCalGas) is one of Sempra Energy's California utilities regulated by the California Public Utilities Commission. Sempra Energy, based in San Diego, California is a Fortune 500 energy services holding company.

SoCalGas is the nation's largest natural gas distribution utility, delivering clean, safe and reliable energy to 21.6 million consumers in more than 500 communities across 20,000 square miles throughout central and southern California, from Visalia to the Mexican border.

SoCalGas' service territory is located in nine of California's air districts, including South Coast Air Quality Management District (SCAQMD) and San Joaquin Valley Air Pollution Control District (SJVAPCD), which are the only extreme ozone nonattainment areas in the United States. Both the SCAQMD and SJVAPCD air districts must reduce nitrous oxide (NOx) by more than 50% in order to attain ozone and particulate matter (PM2.5) National Ambient Air Quality Standards promulgated by your agency.

SoCalGas submits this letter in support of the above-referenced SJVAPCD Petition filed with EPA on June 22, 2016. Attainment of the federal ozone and PM2.5 standards is vitally important to those communities in which SoCalGas operates and provides natural gas service.

The SJVAPCD and the California Air Resources Board (CARB) have demonstrated that attainment of the 2008 8-hour ozone standards will be unachievable without emissions reductions from a new, ultra-low heavy-duty engine exhaust emission standard for NOx. Over eighty five percent of regional NOx emissions in the SJVAPCD come from mobile sources within their air basin, and on-road heavy-heavy duty diesel trucks (HHDV) are the largest categorical contributor.[1]

[1] SJVAPCD 2016 Ozone Plan for the 2008 8-Hour Ozone Standard, Appendix B – Emissions Inventory (June 2016), http://www.valleyair.org/Air_Quality_Plans/Ozone-Plan-2016/b.pdf

As detailed in the Petition, a revised low NOx standard of 0.02 g/bhp-hr is technologically and commercially feasible. In 2015, Cummins Westport Inc. certified the world's first heavy-duty engine at near-zero emission levels—90 percent below the existing federal standard, and certified to meet ARB's lowest-tier optional low-NOx emission standard. This "next generation" heavy-duty natural gas engine is now commercially available for transit bus, refuse, school bus, and medium-duty truck applications. Additional near-zero-emission heavy-duty natural gas engines are expected to follow by 2018, addressing a wider array of medium- and heavy-duty on-road applications.

The tailpipe emissions of heavy-duty vehicles running on these engines are as low as emissions associated with generating the electricity used to charge heavy-duty battery-electric vehicles with a state of the art generation plant. When paired with renewable natural gas, which provides the lowest carbon intensity of any transportation fuel available today, this technology has the added benefit of providing significant greenhouse gas emissions reductions (80 percent or greater).

SoCalGas supports federal leadership to implement an ultra-low heavy-duty engine emission standard for NOx in order to achieve the necessary emission reductions for both the South Coast Air Basin and the SJVAPCD to attain federal ozone standards.

Respectfully submitted,

George Minter
Regional Vice President, External Affairs and Environmental Strategy

cc: Christopher Grundler, Director, Office of Transportation and Air Quality, EPA
Grundler.christopher@epa.gov

Seyed Sadredin, Air Pollution Control Officer, SJVAPCD,
Seyed.Sadredin@valleyair.org

Responses to Comment Letter from Southern California Gas Company (SoCalGas)
(Comment Letter #56)

Response to Comment 56-1:

SCAQMD staff appreciates the participation in the development of the 2016 AQMP and future participation in the implementation of the Plan strategies.

Response to Comment 56-2:

SCAQMD staff agrees that a robust mobile source strategy is critical as it has already been determined that the standards would still not be met if all stationary sources under the authority of the SCAQMD were reduced to zero. Please see Responses to Comments 30-5 and 54-2 regarding "fair share" reductions.

Response to Comment 56-3:

SCAQMD staff agrees that the fast approaching deadlines for the ozone standards will require cleaner technology that is available now so there are opportunities for near-zero technology to fulfill that need. In addition, incentives could help advance deployment of cleaner technology and assist in public acceptability. Staff modified the Plan objective to prioritize maximizing emission reductions utilizing zero-emission technologies when cost-effective and feasible and near-zero emission technologies in all other applications. Further, staff appreciates support for the incentive measures.

Response to Comment 56-4:

Staff appreciates the support for the incentive programs. Please see Response to Comment B-2 regarding the emissions inventory. Older, higher-emitting NOx equipment will be targeted by this control measure. The purpose of the incentive program is to create opportunities and make it more cost-effective to replace equipment, transition to zero or near-zero technologies, encourage earlier change-out of higher-emitting equipment, and drive technology development and cost reduction. Projects that are more cost-effective may be given priority compared to other projects with less NOx reductions and higher costs (larger incentives needed).

Response to Comment 56-5:

Staff agrees that along with the updated Plan objective discussed in Response to Comment 56-3, the incentives can assist in early deployment of advanced cleaner technologies particularly if the emission sources are smaller in size but cumulatively have an impact. The control measures referenced propose to incentivize currently available technology in the near-term and zero and near-zero cost-effective technologies in the future.

Response to Comment 56-6:

Existing programs are built into the future emission baseline projections. As SCAQMD develops and implements new incentive programs staff will work with the existing rebate program administrators to help end users leverage multiple programs. Please see Response to Comment 17-3 regarding fuel neutrality.

Response to Comment 56-7:

Chapter 10 has been updated in the Revised Draft Plan to expand the discussion on biogas and renewable natural gas. The 2016 AQMP also includes control measures CMB-03, which focuses on emissions reductions from non-refinery flares and CMB-01, which includes technologies for stationary sources, including possible incentives for biogas utilization as a transportation fuel or pipeline injection, if cost effective.

Response to Comment 56-8:

The SCAQMD staff believes that all fuels should be based on renewable fuel stocks to the greatest extent possible. As such, staff sees a need for renewable natural gas and renewable diesel. As pointed out in the State SIP Strategy and the 2012 Vision for Clean Air document, while a greater penetration of alternative fuels is envisioned out to 2050, diesel fuel trucks will remain a large contribution to the region's air quality problems due to the fact that many of these trucks are from out-of-state. SCAQMD staff will continue to work with CARB, CEC, U.S. EPA, and U.S. Department of Energy and the Commenter in evaluating the cost and benefits of all biofuels.

Response to Comment 56-9:

Staff agrees that identifying revenue sources for incentive funding is critical. The draft Financial Incentive Funding Action Plan is being developed to identify existing funding sources and potential new sources of funding.

Response to Comment 56-10:

Staff shares the interest in local manufacturers developing low-emission equipment. SCAQMD cannot dictate such an action, but could consider this during the design of incentive programs. Staff encourages participation during the incentive program development to provide suggestions and support. Staff appreciates the support in Attachments A and B to this specific comment.

Response to Comment 56-11:

56-11A: Staff appreciates the support. Staff's intent is to incentivize the replacement of older and higher emitting equipment. Please see Response to Comment 71-1 regarding CMB-01 and the incentive criteria. Staff anticipates many facilities and stakeholders will come forth and participate in the incentive programs. Once a working group is established, it will help to determine the most cost-effective means for distribution of funds to achieve emission reductions.

56-11B: Staff has revised Table 1 in the emissions inventory for stationary internal combustion engines (ICEs). Please see Response to Comment 73-2 regarding the stationary ICEs inventory.

56-11C: Please see Responses to Comments 17-3 and 83-2 regarding fuel and technology neutrality. Please see Response to Comment 83-14G regarding combined heat and power (CHP).

56-11D: Staff appreciates the support. Once a working group is formed, retrofits that are cost effective and technologically feasible may be considered for incentives.

Response to Comment 56-12:

56-12A: Please see Response to Comment 83-15C, regarding Rule 1111 and commercial space heating equipment.

56-12B: Please see Response to Comment 17-3, regarding fuel neutrality. Staff appreciates the support.

Response to Comment 56-13:

56-13A: Staff appreciates the support and notes the information provided by the commenter.

56-13B: CMB-03 is a regulatory measure for non-refinery flares. The control measure will consist of cleaning the gas that would be typically flared and using it for transportation fuel or pipeline injection or directing it to equipment that can be converted to power and/or heat, if technologically feasible and cost-effective. If all other options are infeasible, the installation of newer flares implementing the best available control technology will be required. Incentive opportunities can be made available under CMB-01. A working group will be formed during rulemaking and the SCAQMD welcomes the commenter to participate.

Response to Comment 56-14:

Staff appreciates the support and will continue to work with the commenter on high-efficiency and low emission technologies. During rulemaking, a working group will be formed to discuss the technology in detail and staff welcomes all stakeholders to participate. Please see Response to Comment 83-17A regarding residential cooking units. Please see Responses to Comments 83-6 and 83-17B regarding the cost of the incentive programs.

Response to Comment 56-15:

56-15A: Please see Responses to Comments 83-6 and 83-18 regarding cost effectiveness. The initial cost assumption was based on similar assumptions as the CARB cost effectiveness estimate mentioned in the comment. However, the revised estimate is based on Optical Gas Imaging technology supplementing conventional LDAR and does not include the cost of implementing LDAR.

56-15B: Please see Response to Comment 83-18 regarding rule development and aligning requirements.

Response to Comment 56-16:

Staff notes the information provided by the commenter.

Response to Comment 56-17:

Staff appreciates the support. During rulemaking a working group will be formed and cost effectiveness will be considered.

Response to Comment 56-18:

SCAQMD staff appreciates the comments relative to proposed measures MOB-07 and MOB-08 and incentivizing near-zero emission technologies. As the Commenter noted, there is currently an 8.9 liter natural gas engine that is 90 percent cleaner than the 2010 on-road heavy-duty engine emissions standard. The 11.9 liter natural gas engine that is 90 percent cleaner than the 2010 emissions standard is currently being prototyped with anticipated field demonstration in mid-2017.

The SCAQMD staff is currently engaged with CARB staff on funding programs for the near-zero emissions vehicles. As the Commenter is aware, the state legislature appropriated $23 million in Low Carbon Transportation Funds for low-NOx near-zero engines. In addition, the MSRC has been funding transit bus repowers with the near-zero 8.9 liter engine. Staff looks forward with working with the Commenter and affected stakeholders to further incentivize near-zero emission technologies and to the extent that commercially available zero-emission technologies are available. Zero-emission technologies may include some form of hybridization, which would include the use of near-zero emission combustion engines with zero-emission technologies.

Lastly, staff welcomes the Gas Company's participation on the various working groups that will be formed to implement the SCAQMD proposed mobile source measures including MOB-08.

Response to Comment 56-19:

SCAQMD staff thanks the Commenter for submitting the "Near-Zero Emission (NOx) Natural Gas Truck Opportunities in the South Coast Air Basin" report. The report will help inform the public on the benefits of near-zero natural gas engine technologies. SCAQMD staff will continue to work with the Commenter in the deployment of near-zero natural gas technologies and the use of renewable natural gas to help the region meet federal air quality standards.

Response to Comment 56-20:

56-20A: The portion of the chapter referenced relates to the increase in methane emissions globally. We agree that methane reacts slowly in the atmosphere, and therefore, it is not considered an important ozone precursor within an urban scale. Methane's atmospheric lifetime is over a decade. This long atmospheric lifetime and strong absorption bands within the IR regions make it a potent greenhouse gas. However, methane does eventually react like a VOC in the atmosphere and results in the formation of ozone on a more global scale. With increasing global background concentrations of methane, the background levels of ozone also increase. If global emissions of methane continue to increase corresponding to higher global background levels, the ozone levels coming into the Basin will be higher. The SCAQMD along with other agencies will continue to monitor and further study how much increasing background ozone is expected to affect the Basin's ozone levels.

56-20B: Staff agrees that power to gas is an important technology that helps incorporate higher levels of renewable resources. Chapter 10 of the AQMP discusses the important need for storage technologies to help incorporate higher percentages of renewable energy. Part of this discussion includes the importance of further developing power to gas technologies. The chapter shows the importance of power to gas technologies to help with large utility scale storage along with long term energy storage needs.

56-20C: The 2016 AQMP includes many areas focused on the further development of biogas and renewable fuels. Within the Basin, there are opportunities to further develop waste streams to produce biogas along with the better utilization of existing waste streams to not only recover biogas but also reduce emissions at these sources. There are many different types of biogas sources and technologies that can be developed along with those listed. The SCAQMD has also been working to help bring new biogas facilities online in the Basin by helping fund the development of new facilities that utilize municipal waste and food waste streams. Within the AQMP, several stationary and mobile source control measures pursue and utilize the development of biogas waste streams. The SCAQMD has been in discussions with SoCal Gas, wastewater treatment facilities, landfill operators, and others in working on better

understanding the issues surrounding the economics and need for regulatory certainty to further develop biogas sources within the Basin and in California.

Utilizing biogas for transportation sources can create a win-win for both emissions and the local economy. However, as noted, not all biofuels reduce criteria or GHG pollutant emissions. We recognize certain biofuels can potentially reduce NOx and have negative carbon pathways. We agree that it is important to study the lifecycle emissions of these fuels for not only GHGs, but also for criteria pollutants.

Comment Letter from Southern California Leadership Council (Comment Letter #57)

SOUTHERN CALIFORNIA LEADERSHIP COUNCIL

444 South Flower Street, 37th Floor
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August 19, 2016

Dr. Philip Fine
Deputy Executive Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 92765

Re: Comments Concerning the South Coast Air Quality Management District's June 2016 Draft Air Quality Management Plan.

Dear Dr. Fine,

On behalf of the Southern California Leadership Council and the undersigned group of partner organizations, we thank you for the opportunity to review and comment on the June 2016 draft of the 2016 Air Quality Management Plan (the "Draft AQMP"). Our group is comprised of leading Southern California business and industry organizations.

Each of our organizations appreciates the assistance provided by, and the hard work of the able staff of the South Coast Air Quality Management District (the "District") in the many months leading up to the Draft AQMP. As we bring the issues set forth below to your attention for consideration as part of your work to finalize the AQMP, we look forward to additional helpful discussions. In particular, we applaud the District's staff for its willingness to champion incentive-based approaches to address the region's air quality challenges, and its recognition of the fact that economic considerations call for flexibility and adaptability in such far-reaching regulatory processes. 57-1

Our organizations are particularly focused on assuring that the District will continue the historically stellar progress toward safer air quality throughout the District's jurisdiction, while avoiding any and all unnecessary negative economic and societal impacts. In particular, we share the District's aim for air quality that is cleaner still; but we do so in light of the ongoing need to more fully and successfully provide employment and housing for the District's growing population. With that in mind, we applaud the District's promise to provide thorough economic analyses, including an evaluation of the AQMP's impact on jobs and job creation. Our groups will continue to work with the District and other stakeholders to assure that sound science and economic analyses are met with equally sound regulatory policies as we pursue our shared aims.

Given this backdrop, we respectfully submit the following comments at this time:

I. The District needs to provide additional information before we can fully and fairly assess, comment upon, and help the District to promulgate the AQMP.

Although the District's staff has made impressive efforts to produce and present the Draft AQMP, the presentation for public comment still excludes numerous elements that must be received by the interested public and taken into consideration. These thus-far omitted elements include the Modeling and Attainment Demonstrations Appendix, Compliance with Other Clean Air Act Requirements Appendix, the Socioeconomic Analysis, and the Program Environmental Impact Report, none of which have yet been released in draft form for public review. 57-2

Consequently, our organizations provide in this letter only the most general and basic comments, while reserving our right to provide more comprehensive, detailed and connective comments at any appropriate time when those additional elements come into view.

II. The Draft AQMP relies heavily on large amounts of funding for incentive-based emissions reduction programs without identifying and analyzing sources of needed funding.

The Draft AQMP discusses measures that are expected to be implemented through the provision of financial incentives to accelerate the penetration of, for example, zero-emission and near-zero emission technologies, and to further reduce emissions from other mobile and stationary control measures. Specifically, the Draft AQMP identifies the need for $14 billion in new funding to advance various suggested "incentive strategies." 57-3

While our organizations greatly appreciate this approach because, once again, we generally favor incentive based programs over less flexible command and control regulations, we are keenly interested in understanding and commenting upon the means by which the District might secure all such funding. Our concern is underpinned by the fact that many constituencies in the District are already hard-pressed by regulatory impositions that cumulatively harm the region's economy and add to the persistent shortage of jobs and housing.

Our organizations are also extremely concerned about the additional relative burdens that may be imposed upon various constituencies if and when tax or fee regimes might be fashioned to amass such financing. Many constituencies – particularly new and relocating industries, new development and homebuilding, and redevelopment – are already over-burdened, even without new and additional impositions. Therefore, our organizations look forward to more information and discussion about financial solutions that will square with the very broad-based societal benefits of the District's efforts to further improve air quality.

III. EMG-01, in particular, has the potential to unfold in ways that will seriously stultify development and redevelopment and harm the region's economy.

The Draft AQMP contains a vague and ambiguous discussion of a promised measure labeled as EGM-01, which puts forth the prospect of a so-called indirect source regulation. The stated purpose of this measure is to mitigate and reduce emissions from new development and redevelopment projects. The description of EGM-01 is unclear; but it implies the potential for the imposition of new fees on development and redevelopment throughout the District or, selectively and arbitrarily, perhaps in ways similar to Rule 9510 adopted by the San Joaquin Valley Air Pollution Control District.

Our organizations are generally opposed to new development and redevelopment fees that may be imposed on top of the already highly excessive costs and burdens imposed by the California Environmental Quality Act. Moreover, our organizations have long appreciated and championed the primacy of local governments' decision-making powers concerning questions of land use and development – consistent with our democratic principles, and the fact that development invariably unfolds in response to organic demand from countless quarters. 57-4

Because EMG-01 is ambiguous as set forth in the Draft AQMP, and because it hints at the prospect of an unduly heavy-handed new land use regime, our organizations urge the District to exclude this measure from the District's enforceable, federalized measures. We look forward to participating in further discussions with the District to make sure that the District's clean air goals are not seen as having such overwhelming importance as to warrant the sacrifice of venerable and sensible land use prerogatives. In addition, the District will need to be mindful of the limitations of its enabling statutes if and when it brings forward any proposal under this measure.

IV. The proposed measures denominated MOB-1 through MOB-4 and MOB-8 would harm goods movement and the industries related thereto, and should be entirely reconsidered.

Our organizations respectfully oppose the proposed control measures denominated MOB-1 through 4 and MOB-8. Efficient and economical goods movement is essential to the region's overall economy, especially given that our region is home to the busiest and most important ports in the nation. Emissions related to goods movement should be addressed gradually and nationally through fleet change incentives and reasonably paced technological change, such as the affordable, appropriately gradual adoption of fuel and engine-type changes, which can most sensibly be achieved through standards for new vehicles. To the extent that the above-referenced MOB measures might be read to invite arbitrary caps on goods movement facilities and limitations on what are truly diffuse and dynamic goods movement activities, they should be discarded. 57-5

V. The District should reconsider and recast all measures that are proposed without quantified air quality benefits. 57-6

The Draft AQMP discusses various measures for which no air quality benefits are quantified, referred to as "to-be-determined" or "TBD" measures. A broad reading of the Draft

AQMP suggests that the AQMD's implementation should be able to meet the federally imposed air quality standards even if all such TBD measures were to be forgone. Accordingly, our organizations urge the District to either forgo all such TBD measures in the AQMP, or incorporate only those for which both the costs and benefits of the measures can be identified and vetted publicly before they are included. Importantly, no socio-economic analyses can possibly be performed if there are no quantified air quality benefits from the measures at issue. Therefore, to the extent that the merits of such measures cannot be reasonably proven in the current AQMP process, such measures should be identified only as possible areas of future study and consideration. 57-6 Con't

VI. Our organizations urge the District to forgo CMB-05, which as proposed, would make adjustments to the RECLAIM program outside of the recent and very successful process for RECLAIM program amendments.

We note that the Draft AQMP includes a measure (CMB-05) that proposes to make a downward adjustment in permissible NOx emissions under the RECLAIM program applicable to stationary sources. The RECLAIM program was recently amended through a process that was, as is typical, robustly attended by all constituencies, and at which large volumes of detailed evidence was provided. More importantly, the recent amendments are the result of remarkable voluntary concessions, stakeholder engagement and broad-based agreement. In light of this, we believe that the AQMP process is not the proper vehicle through which to reconsider RECLAIM, given that the District's, its committees and Board, and all constituents' attention are spread over a much broader range of issues. Accordingly, we urge the District to remove CMB-05 as a measure, and rely instead on the existing process for future amendments to the RECLAIM program. 57-7

VII. The District needs to undertake a critical re-assessment of the burdensome federal and state air quality mandates with a view to advancing either (i) the most desirable and economical ways to comply, or (ii) the most persuasive and successful ways to challenge and correct them.

Our organizations recognize that the District is legally responsible for taking action to meet goals and stay within parameters mandated by state and federal law, particularly by the U.S. Environmental Protection Agency and the California Air Resources Board. Indeed, the District has long been tasked with trying to achieve increasingly stringent federal standards that are imposed disparately on our highly populous and economically important South Coast region. 57-8

Our organizations urge the District to take a more clear-headed and circumspect stance regarding the increasingly difficult state and federal targets and mandates that the District is being asked to meet. Many of the most recent federally imposed criteria air pollution standards have merely arguable scientific (health) justification. Respectfully, the District should be identifying these issues and effectively challenging the promulgating agencies to which it must regularly submit plans and measures.

Our South Coast region has already seen tremendous improvements in air quality in recent decades, but not without serious and unsustainable economic costs. Achieving still cleaner air

quality is reasonably possible only through careful, measured, sensible steps and with great care concerning the economic consequences. Our region's economy will be crippled if the District simply attempts to implement aggressive state and federal mandates, knowing that they will force rapid and extensive transformation on industries that are unable to accommodate such change. When warranted, the District must be willing to push back on unrealistic mandates and/or work for more reasonable and achievable pathways and timelines for reaching these aggressive targets.

57-8 Con't

VIII. Conclusion

Once again, we wish to applaud the District and its staff for the efforts concerning both the Draft and the AQMP. We look forward to your responses. We hope that future releases of the Draft 2016 AQMP will be coordinated to include all appendices and supporting documents to ensure we all are afforded a comprehensive review. We thank you for your consideration of these comments, and for your ongoing work with us and all stakeholders.

Respectfully submitted,

Richard Lambros
Managing Director
SCLC SOUTHERN CALIFORNIA LEADERSHIP COUNCIL

Mike Lewis
Senior Vice-President
CIAQC

Wes May
Executive Director

Paul Granillo
President & CEO
IE INLAND EMPIRE ECONOMIC PARTNERSHIP

Peter Herzog
Assistant Director of Legislative Affairs
NAIOP COMMERCIAL REAL ESTATE DEVELOPMENT ASSOCIATION

Rob Evans
Executive Director
NAIOP COMMERCIAL REAL ESTATE DEVELOPMENT ASSOCIATION INLAND EMPIRE CHAPTER

Bryan Starr
Sr. Vice President, Government Affairs
ORANGE COUNTY BUSINESS COUNCIL

Responses to Comment Letter from Southern California Leadership Council (SCLC)
(Comment Letter #57)

Response to Comment 57-1:

Staff appreciates the participation in the development of the 2016 AQMP and support for the incentive measures. Further, staff echoes the commenter's interest in ensuring the economic impacts, such as job loss and job creation are fully analyzed and considered.

Response to Comment 57-2:

Please see Responses to Comments 38-1 and 52-1 with regard to the timing of the release of the Plan, appendices, and various related documents, and the ability to review and comment on those documents with appropriate time.

Response to Comment 57-3:

Please see Response to Comment 26-3 with regard to the Financial Incentive Funding Action Plan. Staff appreciates the support for the incentives but also recognizes the value of a regulatory approach that establishes permanent and enforceable reductions. Staff believes there can be a balance to achieve the aims of clean air while not imposing undue burden on industry, housing and re-development.

Response to Comment 57-4:

A comment is made that proposed measure EGM-01 is vague and ambiguous. The measure is broadly drafted to provide for discussion with affected stakeholders and the public on identifying actions that can potentially result in the mitigation of emissions and potentially additional emission reductions from new and redevelopment projects. Such actions can be regulatory or voluntary in nature. As such, the measure does not propose a specific control method.

Please see Response to Comment 38-3 regarding the proposed facility-based control measure EGM-01. While the District may not dictate what land use can occur in what area, it may impose additional requirements on a source to ensure attainment of air quality standards.

Response to Comment 57-5:

Staff believes that the approach proposed to identify actions that the goods movement industry are implementing for cost savings reasons is an approach that will not harm the goods movement industry. This is one area of opportunity that will be further discussed as part of the public process.

A comment was made that "Emissions related to goods movement should be addressed gradually and nationally through fleet change incentives and reasonably paced technological change, such as the affordable, appropriately gradual adoption of fuel and engine-type changes, which can most sensibly be achieved through standards for new vehicles." Given the amount of emission reductions needed to attain federal air quality standards and the short deadlines to meet the first ozone air quality standard by 2023, there is a need to accelerate turnover of older vehicles and equipment as soon as possible. This acceleration will be much faster than typical "business-as-usual" rate of adoption of new fuels and acquisition of new cleaner vehicles. The SCAQMD staff and CARB are proposing that additional incentives funding be identified to help with this effort. In addition, actions being taken in the goods movement

industry may have emission reduction co-benefits that could be recognized in the SIP. Some of these actions may be the result of other (non-SCAQMD) regulatory requirements or to improve operational efficiency.

Response to Comment 57-6:

Please see Response to Comment 7-5 regarding the proposed SCAQMD TBD measures and Response to Comment 38-5 regarding mobile source measures.

As noted in the Socioeconomic Impact Report, several of the SCAQMD mobile measures are proposed to help meet the emission reductions associated with the State SIP Strategy "Further Deployment" measures. As such, no additional emission reductions are specifically provided for the SCAQMD mobile source measures. However, the estimated cost to achieve the emission reductions associated with the State SIP Strategy measures have been analyzed in the Socioeconomic Impact Report.

Response to Comment 57-7:

The December 2015 amendments to the RECLAIM program came as a result of a BARCT assessment. State law mandates that these BARCT assessments occur periodically in order to identify feasible and cost effective technology that can be applied to existing RECLAIM sources to achieve program equivalency. RECLAIM amendments in the past have resulted from control measures of previous AQMPs. The RECLAIM rulemaking will go through a public process.

Response to Comment 57-8:

Staff acknowledges the commenter's opinion of challenging agencies promulgation of new air pollution standards, but that action would not preclude the need to comply with existing requirements to meet the current ozone and PM2.5 standards. Further, the approval of the federal standards is a long public process. The Clean Air Act requires the periodic review of the standard such that all of public health studies are conducted and reviewed in the public domain. This review is also conducted by an independent panel of Clean Air Scientific Advisory Committee (CASAC) who makes recommendations to U.S. EPA before U.S. EPA decides how to proceed. Staff would encourage those interested in the development of the standards and those concerned regarding the stringency of the standards to participate in this process. Currently, there is a review of the PM air quality criteria and standards. An Integrated Review Plan (IRP) was released this year for public review and comment. Please access the following link to download the IRP: https://yosemite.epa.gov/sab/sabproduct.nsf//LookupWebProjectsCurrentCASAC/EB862B233FBD0CDE85257DDA004FCB8C?OpenDocument. There will be three more accompanying documents to be released over the next three years for public input before any potential rulemaking would take place.

Comment Letter from the Truck and Engine Manufactures Association (Comment Letter #58)

STATE OF CALIFORNIA
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

SCAQMD's Draft 2016 Air Quality Management Plan	))	**Comment Deadline: August 19, 2016**

COMMENTS OF
THE TRUCK AND ENGINE MANUFACTURERS ASSOCIATION

August 19, 2016

Jed R. Mandel
Timothy A. French
Truck and Engine Manufacturers Association
333 West Wacker Drive, Suite 810
Chicago, Illinois 60606

STATE OF CALIFORNIA
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

SCAQMD's Draft 2016 Air Quality Management Plan	))	**Comment Deadline: August 19, 2016**

COMMENTS OF THE TRUCK AND ENGINE MANUFACTURERS ASSOCIATION

Introduction

The Truck and Engine Manufacturers Association ("EMA") hereby submits its comments on the Draft 2016 Air Quality Management Plan (the "Draft AQMP") that the South Coast Air Quality Management District ("SCAQMD" or the "District") released for public review on June 30, 2016.

EMA is the not-for-profit trade association that represents the world's leading manufacturers of internal combustion engines, and the vehicles and equipment that those engines power, other than passenger cars. Heavy-duty on-highway ("HDOH") engines and vehicles are included among the broad array of products that EMA's members design and manufacture. Inasmuch as one of the core regulatory strategies at the heart of the Draft AQMP is the adoption of new low-NO_x emission standards for HDOH engines – indeed, the SCAQMD has petitioned the U.S. EPA to initiate a rulemaking to adopt such standards – EMA's members have a direct and very significant interest in ensuring that the Draft AQMP is based on accurate, well-reasoned and validated emissions inventory assumptions and modeling. As discussed in detail below, that is not the case.

The Draft AQMP, as it relates to HDOH engines and vehicles, is premised on significant over-estimations of future ozone levels in the South Coast Air Basin ("SCAB"). The SCAQMD and the California Air Resources Board ("CARB") have derived those over-estimations from their use and application of the Community Multi-Scale Air Quality ("CMAQ") model, which, as applied in this context, consistently has over-predicted future ozone levels in the SCAB for many years, including as recently as 2012 when CARB and the SCAQMD developed their last SIP submissions. In light of those consistent over-predictions of ozone, the SCAQMD's assertion (including in its rulemaking petition to EPA) that ozone attainment requires an additional 90% reduction in NO_x emissions from HDOH engines and vehicles – over and above the rigorous NO_x-control regulations that are already in place – is not supported by the facts. While some future HDOH emission requirements may prove to be warranted and reasonable, the assumed premise for adopting a 90% lower NO_x standard in 2019 is incorrect. 58-1

CARB's EMFAC model – the tool for estimating future levels of individual precursor emissions, and in particular NO_x – also is over-estimating the magnitude of future-year emission inventories, and is utilizing emission inputs and related data that are significantly out-of-date. This, too, is a fundamental problem that needs to be remedied before the District proceeds to adopt any specific menu of SIP strategies, especially strategies that it estimates will cost well in excess of $38 billion, including almost $14 billion in incentive funding.

The following detailed comments on the Draft AQMP focus on eight main points. Certain of those points overlap with the comments that EMA previously submitted regarding CARB's 2016 SIP Strategy. A copy of EMA's earlier comments on the CARB SIP Strategy is attached as Exhibit "A," and is incorporated by reference into these comments.

1. The SCAQMD Needs To Extend The Current Deadline For Comments

The August 19th deadline that the SCAQMD has established for comments on the Draft AQMP is not reasonable. In particular, the District has not yet made available the critically important "Appendix V" materials (referred to as the District's "Modeling and Attainment Demonstrations"), which contain the "detailed information on the modeling approach, data retrieval, model development and enhancement, model application, emissions inventory development, and interpretation of results." (Draft AQMP, p.5-3.) In essence, Appendix V contains virtually all of the relevant detailed information relating to the accuracy and validity of the Draft AQMP. Yet it is not available for review in advance of the comment deadline. Indeed, it appears that the Appendix V materials will not be available until weeks after the comment deadline. 58-1 Con't

That is not consistent with the requirements of administrative due process. The District should extend the comment deadline on the Draft AQMP to a date that is at least 30 days after the public release of all of the Appendix V materials, and the District's draft response to comments should be discussed within the Scientific Technical Modeling Peer Review (STMPR) Advisory Group before the District's responses are included in any draft final 2016 AQMP.

2. The AQMP Should Include Scientific Validation Of The Approach Used To Estimate Future Ozone Design Values (DVs), And Should Correct For Any Identified Discrepancies

Review of the District's current and past AQMP attainment modeling efforts indicates that the model-derived results consistently under-estimate projected ozone reductions and over-estimate needed emission reductions. (See Exhibit A.) In particular, analysis of the current Draft AQMP indicates that it continues the trend of under-estimating future ozone reductions and, thus, over-estimating absolute ground ozone levels in the applicable attainment years (2023 and 2031). This necessarily yields incorrect conclusions regarding the extent to which multi-billion dollar controls and incentives are required to reach attainment in the SCAB. 58-2

The SCAQMD should undertake the necessary efforts to validate the operative predicted ozone reduction rates by comparing modeled backcasts against measured historic ozone design values ("DVs"), and should caveat the District's model-based attainment projections accordingly. Simply stated, and as detailed below, the discrepancies between modeled and measured levels of ozone and NO_x in the SCAB are too significant at this juncture to allow for the adoption or implementation of multi-billion dollar public policy choices based on that modeling.

Accordingly, the SCAQMD should not finalize the Draft AQMP until such time as the latest modeled projections can be fully assessed and validated. To that end, and before seeking Board approval of the Draft AQMP, the SCAQMD should utilize the validation methods and analyses that U.S. EPA recommends, including "dynamic evaluations" that assess and take into

account the past performance of air quality modeling efforts. If such validation shows that the 2016 AQMP models under-predict ozone trends going back in time 10 to 15 years (backcasts), we recommend that the forecasts be adjusted accordingly.

The potential under-estimates in ozone reduction rates (which appear to be on the order of 2 times or more) could result in billions of dollars being spent unnecessarily. Thus, we also recommend that prioritized modeling and technical research studies be initiated as soon as possible, and that the appropriate qualifiers be included in the Draft AQMP stating that any enforceable emission reduction commitments will be subject to revised and improved attainment demonstrations. In that regard, EMA appreciates the meeting that was held on May 26, 2016, with experts from Ramboll-Environ and Sonoma Technologies Inc. ("STI"), and with the SCAQMD modeling team, during which we discussed the need to assess and validate the relevant CMAQ-based results, and agreed in principle to collaborate on the recommended type of modeling validation efforts. The statement of work that Ramboll/STI have prepared to undertake the validation work at issue is attached as Exhibit "C." EMA looks forward to iterating with the District staff as this important work proceeds. 58-2

The recommended validation work is not simply an academic exercise. The costs of erroneous projections are extremely high. In fact, the SCAQMD is anticipating that its Draft AQMP will have an implementation price tag exceeding $38 billion. Those enormous costs raise very serious questions about the unintended adverse consequences of inaccurate air quality modeling and emission inventory estimates. Those questions become even more pointed when the actual current rate of progress in reducing ozone levels is considered.

3. The Current And Recent AQMPs Significantly Underestimate Ozone DV Rates of Reduction When Compared Against Measured SoCAB Ozone DVs

As noted above and as detailed in Exhibit A, the CMAQ modeling tool, as applied in this context, is yielding significantly different results compared to the trends in actual observed and measured ozone concentrations. Unless the SCAQMD can point to new validation efforts demonstrating that the "updated modeling platform" is significantly better at predicting future trends or rates of ozone reductions/increases over time, there is no basis for assuming that the past over-estimates of future ozone levels will not continue. In the past (i.e., the 2012 AQMP), Appendix V was used to show the accuracy (uncertainty) of models as assessed against the "base year" (2008 in that case). However, that type of "base year" validation – which really only amounts to a re-anchoring of the model to updated inventory numbers – does not assess the accuracy of the model with respect to actual forecasts or backcasts. It is that type of "dynamic" validation work that is required. Of course, in this instance, as already noted, the relevant Appendix V materials are not even available. 58-3

At page 5-3 of the AQMP, the District states: *"The trend of Basin ozone design values is presented in Fig 5-1. The 8-hour design values have averaged a reduction of approximately 2.3 ppb per year over the 14-year period..."*

The referenced "14 year period" covers the years from 2001 through 2014. While the District highlights the average rate of ozone DV reductions over that time period, the District fails to acknowledge that the previous 2007 and 2012 AQMPs, as well as the current Draft AQMP, continue to predict rates of ozone design value ("DV") reductions that are much lower than those actually measured (see chart below). A review of the three most recent AQMPs shows that the model-predicted ozone DV reduction rates have been as follows:

2007 AQMP: 1.38 ppb per year (years 2002 to 2023)
2012 AQMP: 0.60 ppb per year (years 2008 to 2023)
2016 AQMP: 0.73 ppb per year (years 2012 to 2023)

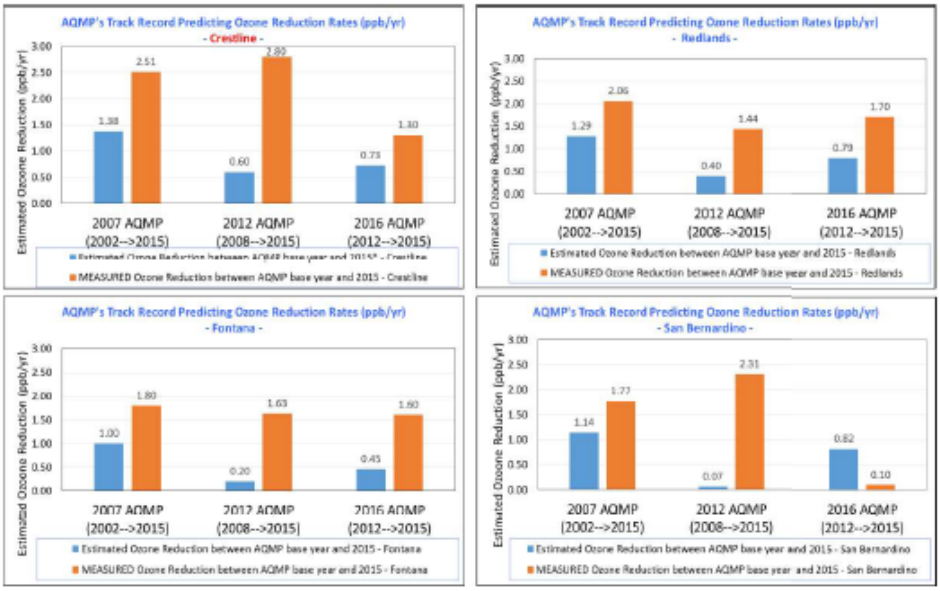
To evaluate the accuracy of the above CMAQ-derived ozone DV trend predictions, we have used the following data, assumptions and analytical methods:

- The 2007 AQMP contains predicted ozone DV changes from 2002 to 2023
- The 2012 AQMP contains predicted ozone DV changes from 2008 to 2023
- The 2016 Draft AQMP contains predicted ozone DV changes from 2012 to 2023
- Actual measurements of ozone changes (reductions) between 2002 and 2015 are readily available from CARB and District databases
- Prior analysis by Ramboll-Environ (see Exhibit A, p.5, and Exhibit "B," which is an enhanced excerpt from Exhibit A), using 2012 AQMP CMAQ-ready files, has shown that ozone predictions between 2001 and 2023 are fairly linear (i.e., the slope of reductions between 2001-2014 is almost the same as the slope between 2014 and 2023 for all the SCAB monitoring sites). It is thus likely that the AQMPs' predictions of ozone changes between 2002, 2008, or 2012 to 2023 also are fairly linear
- AQMP ozone reductions can be calculated between the base year and 2023, and, for this analysis, the reduction rate is assumed to be the same between the base year and 2015 (linearity)
- Using this approach, we can compare ozone DV reduction rates (ppb/year) between the various AQMP's predictions and those actually measured at the critical monitoring sites in the SCAB for the relevant years used in each AQMP
    - For example, the blue bar depicting the 2016 Draft AQMP's estimated ozone reductions for Crestline (0.60 ppb/yr) (see chart below) is calculated as follows: subtracting the 2023 Baseline DV (Table 5-2) from the 2012 5-yr (baseline) Weighted DV (Table 5-1), and then dividing by 11 years (2023-2012). This resulting 0.60 ppb/yr reduction rate is assumed to be the same between 2012-2015 and 2015-2023. Ongoing work by Ramboll Environ will look to confirm that this linearity assumption remains valid (similar to the linearity demonstrated between 2008 and 2023 using the 2012 AQMP CMAQ database, as depicted in Exhibit B)
- The actual measured DVs between either 2002, 2008, or 2012 and 2015 are estimated using the slope of a linear regression calculation applied to each ozone data set

58-3 Con't

- It is recognized that the 2012-2015 period does not offer enough years to obtain a very robust estimate of ozone DV reductions (ppb/yr). Nevertheless, the comparisons can be made, keeping this caveat in mind

Using the approach described above, the following charts compare ozone DV reductions (ppb/year) between the various AQMP predictions and the actual corollary measurements obtained at the key air quality monitoring sites in the SCAB:



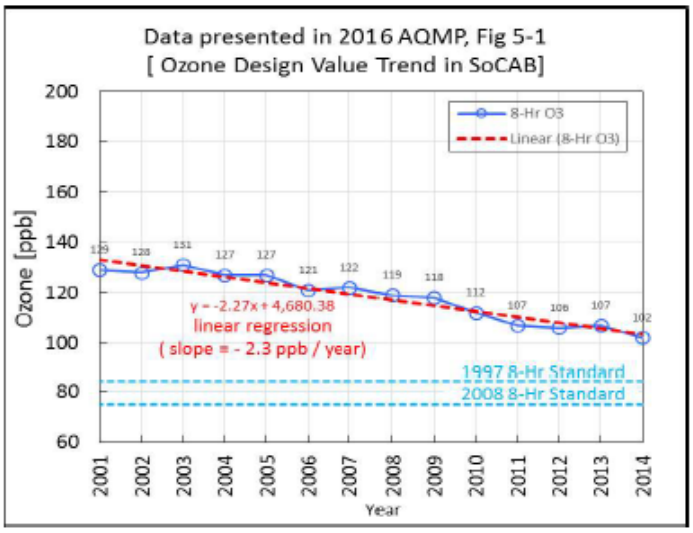
58-3 Con't

The foregoing clearly indicates that the Draft AQMP is predicting very slow reduction rates in ozone DVs similar to the previous AQMPs. In the case of Crestline, for example, the current modeling predicts a reduction rate of just 0.73 ppb/year. However, a review of CMAQ-predictions versus measured ozone DVs over the last decade, as depicted above, does not support the model predictions. The measured reductions are nearly 2 times greater. Moreover, there is no evidence presented in the Draft AQMP to increase the level of confidence in the more recent predictions. To the contrary, it remains likely that the reduction rates predicted for the various monitoring sites in the SCAB are still under-predicting reality to a significant extent.

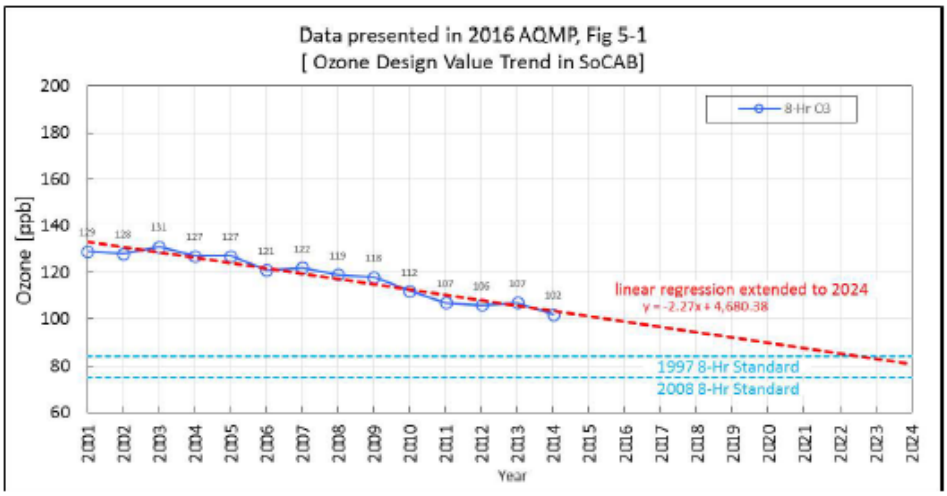
4. If The AQMP Under-Estimates Future Ozone DV Reduction Rates, The SCAB Is Closer To Ozone Attainment In 2023 And 2031

The Draft AQMP states (at p.5-4) that the measured 8-hour ozone design value in the SCAB has been declining at a rate of 2.3 ppb per year over the 14-year period from 2001 to 2014. At that same rate, the ozone level at Crestline (which was 101 ppb in 2014) would be 80 ppb in 2023 and 62 ppb in 2031. That rate of decline would result in an ozone level that would be well below the targeted attainment level in 2031 (of 75 ppb) and in attainment with the applicable NAAQS in 2023 (i.e., a DV less than 85 ppb), without any additional control measures. While expecting a constant 2.3 ppb/year reduction between 2012 and 2023 may not be reasonable, a rate of 0.73 is more unlikely based on the analyzed data to date.

Figure 5-1 from the Draft AQMP shows the ozone DV trend, and compares it against the 1997 8-hr standard (84 ppb when accounting for allowable rounding). Figure 5-1 is reproduced below. For clarity, we have added labels to each data point. We have also included a linear regression through the data (which yields the estimated 14-year ozone-reduction slope of -2.3 ppb/year). It is interesting to note that the DV during those 14 years was set by Crestline each year, except in 2013. In that year, Crestline's DV was 102 ppb while Redlands' DV was 107 ppb. The ozone DV rate of reduction for Crestline during that time period was -2.42 ppb/year. 58-4



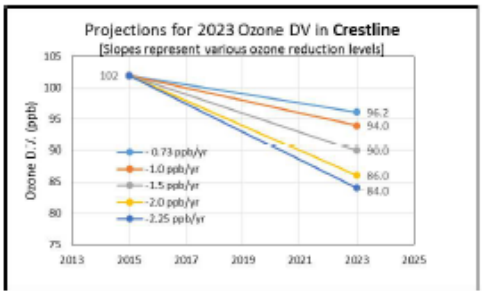
For additional insight, the same data shown are below, extended to 2024, the year when attainment with the 1997 8-hr ozone standard of 84 ppb must be demonstrated. When the established trend is extended to 2024, the DV appears to meet the 1997 8-Hr standard on time.

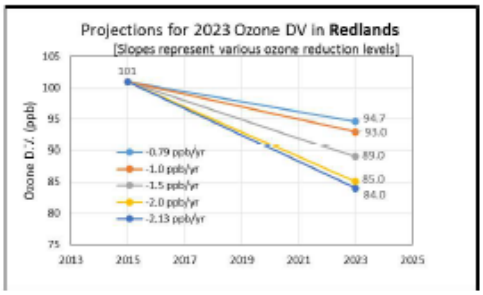


While we have heard from CARB and SCAQMD staff that the measured ozone DV trends are expected to change (slow down) in the future, and already are changing in some monitoring stations, the fact remains that CMAQ-modeled results, as derived for prior AQMPs, have significantly under-predicted the pace of ozone DV reductions. The 2012 AQMP discussed an expected slowing of the ozone DV reduction rates beyond 2008. However, those slower-paced reductions were not confirmed by the subsequently measured data. Significantly, the 2012 AQMP did include emissions inventory updates to account for the 2008-2010 recession, so the recession cannot serve as a potential rationale for the significant discrepancies between AQMP-estimated and actual (measured) ozone DV reductions.

58-4 Con't

There are other ways to explore this same fundamental concern. For example, the chart below illustrates the estimated ozone DV levels for Crestline and Redlands in 2023. Since the actual ozone DVs for 2015 are already known (102 and 101 ppb, respectively, pursuant to CARB's published records), one can predict the 2023 ozone DVs assuming various reduction rates. The Crestline chart shows that the Draft AQMP-predicted rate of 0.73 ppb/yr results in a 2023 ozone DV of 96.2 ppb (12 ppb above attainment). However, if the 0.73 ppb/yr is under-estimated, and, if for instance, the real reduction rates between 2015 and 2023 are more on the order of 1.5 ppb/yr, the 2023 ozone DV would be 90 ppb (just roughly 6 ppb out of attainment). Furthermore, if the actual reduction rate between 2015 and 2023 ends up being closer to 2.25 ppb/yr, Crestline would be in full attainment with the 84 ppb standard. Similar conclusions can be drawn for Redlands or any other monitoring station in the SCAB. These seemingly small differences in 2023 ozone levels can have a profound effect on the necessary extent and cost of attainment-strategy emission reductions. All of this cautions against finalizing a $38 billion AQMP (including $14 billion in incentive funding) before all of the significant modeling uncertainties at issue are resolved.





58-4 Con't

5. The Current AQMP Is Targeting A NO_x Carrying Capacity Based On A 82.0 ppb Ozone Level Instead Of A 84.9 ppb Ozone Level

Other salient facts underscore that the District is over-stating the need for future ozone reductions. For example, in Table 5-2 of the Draft AQMP, the CMAQ modeling that the District is relying on to frame the Draft AQMP has yielded ozone DVs that are below the required regulatory target in 2023, which is 84.9 ppb. Under the District's modeling, the maximum DV (in Table 5-2, Fontana) is reduced to 82 ppb. While that might not appear to be significant on its face, a 2.9 ppb ozone differential corresponds roughly to 20 tons per day ("tpd") of NO_x, which means that the 2023 NO_x carrying capacity should actually be 170 tpd, not 150 tpd as the District claims in the Draft AQMP. That 20 tpd difference amounts to a 13% increase in the SCAB's actual NO_x carrying capacity. Viewed another way, if the District properly calibrated its modeling to match up with the actual point of ozone attainment in 2023 (84.9 ppb), the necessary reductions in NO_x from the baseline would be 32%, not 43% as stated in the Draft AQMP (at page 5-9). 58-5

When coupled with the District's significant over-predictions of future ozone levels, the over-statement of potentially necessary NO_x reductions makes it all the more evident that the Draft AQMP is not sufficiently sound or accurate enough to stand as the basis for public policy choices that the District estimates will cost approximately $38 billion.

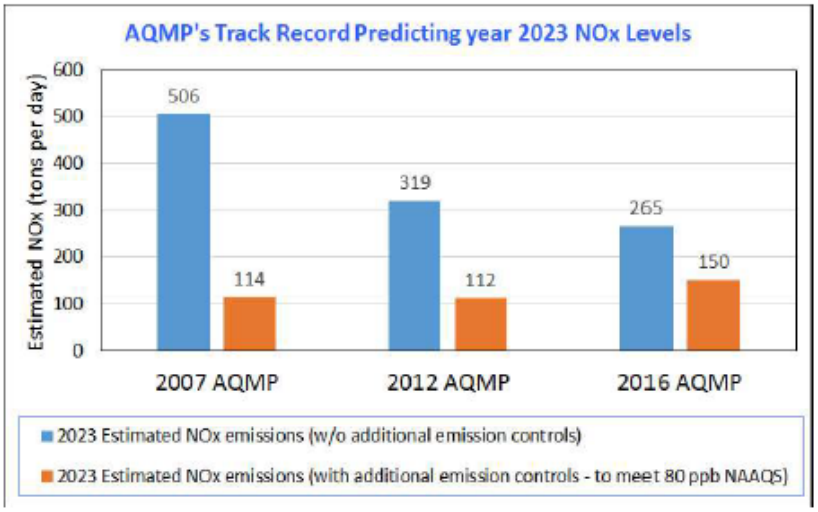
6. The AQMP Needs To Include A Quantitative Uncertainty Analysis Of Baseline And Future-Year Emission Estimates

While a section of Chapter 3 of the Draft AQMP entitled "Uncertainties in the Emissions Inventory" stresses the importance of an accurate inventory and describes general improvements to emissions models, the District fails to include any quantitative uncertainty estimates for the baseline or future-year emissions estimates. Similarly, the District does not discuss or attempt to quantify the uncertainties associated with the methods and datasets used to prepare the emissions estimates for air quality modeling (e.g., spatial and temporal allocation, and chemical speciation). 58-6

Of particular interest are the uncertainties associated with the on-road mobile source emissions estimates that are generated from EMFAC2014. Mobile source NO_x emissions estimates are an area of active research, and several recent studies have found that photochemical grid modeling results show better agreement with ambient monitoring data when NO_x emissions are decreased by 50% or more (See Anderson et al., 2014; Kota et al., 2014; Canty et al., 2015; Jacob

et al., 2015)[1]. Generally, those studies attribute the NO_x overestimates to the mobile source sector. For example, Anderson et al. (2014) suggest that emission control systems deteriorate more slowly than is assumed in EPA's MOVES. In Exhibit A, EMA has highlighted similar concerns relating to the over-stated zero-mile emission rate, and the over-estimated tampering, malfunction and malmaintenance ("TM&M") rates incorporated into EMFAC2014.

While page 3-9 of the Draft AQMP states: *"forecasts are made with the best information available; nevertheless, there is uncertainty in emissions projections,"* this section on uncertainties does not describe or quantify the specific uncertainties related to the District's emissions forecasts. That omission is especially concerning given the dramatic differences in future-year emission projections among the various versions of the AQMP. For example, as shown on the chart below, for the same future-year of 2023, the 2007, 2012, and 2016 AQMPs project baseline NO_x emissions of 506 tpd (2007), 319 tpd (2012), and 265 tpd (2016) – results that vary by nearly 50%.[2] Because those NO_x emissions projections play a critical role in the accuracy of modeled future-year ozone projections, additional understanding of the significant differences in forecasted NO_x emissions is required before finalizing the Draft AQMP.



58-6 Con't

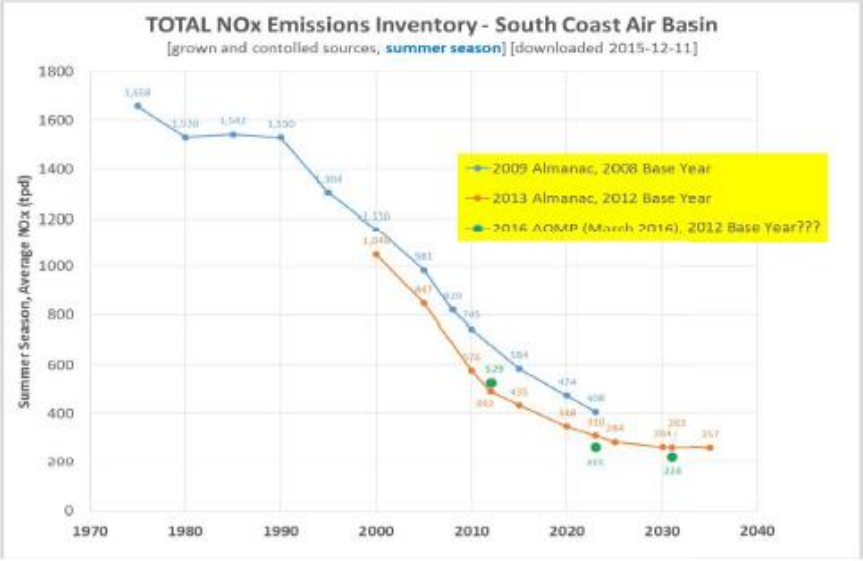
[1] Canty, et al., "Ozone and NO_x Chemistry in Eastern US: Evaluation of CMAQ/CB05 with Satellite (OMI) Data," Atmos. Chem. Phys., 15: 10965-10982 (2015); Anderson, et al., "Measured and Modeled CO and NO_y in DISCOVER-AQ: Evaluation of Emissions and Chemistry Over the Eastern U.S.," Atmos. Environ., 96:78-87 (2014); Kota, et al., "Evaluation of On-Road Vehicle CO and NO_x National Emission Inventories Using and Urban-Scale Source-Oriented Air Quality Model," Atmos. Environ., 85:99-108; Zhou, et al., "Reconciling NO_x Emissions Reductions and Ozone Trends in the U.S., 2002-2006," Atmos. Environ., 70:236-244 (2013); and Jacob, et al., "Factors Controlling PM and Ozone Over the Southeast US as Emissions Decrease: Insights From the NASA SEAC^{4}RS Campaign," EPRI Envision Conference (2015).

[2] Even accounting for the various emission control regulations adopted between the 2007 AQMP and the 2016 Draft AQMP, the baseline NO_x emission projections would still vary by more than 100 tpd (more than 35%).

7. The Impact Of The 2008-10 Recession Was Already Accounted For In The 2012 AQMP, And Should Not Be Considered An Improvement To The 2016 AQMP Modeling

At page 5-8 of the AQMP, the District states: *"... Lower 2023 baseline VOC and NOx emissions in the 2016 AQMP relative to the 2012 AQMP reflect the impact of the recession occurring between 2008 and 2010."* That is not accurate.

Review of the 2012 AQMP reveals that the emissions inventory used for that analysis was based on the 2013 CARB Almanac. Significantly, that set of inventory numbers already appears to have accounted for the 2008-2010 recession. The figure below shows a comparison of NO_x inventory values from the 2009 and 2013 Almanacs, along with the most recent NO_x values used in the Draft AQMP. It is clear that the 2013 Almanac NO_x emissions (which were used for the 2012 AQMP) show an "additional reduction" of NO_x between the 2008 and 2010 time frame. The NO_x slopes of the 2009 and 2013 Almanac values are clearly different during the recession period. Additionally, the NO_x values used in the Draft AQMP (shown in green) seem to line up quite closely to those of the previous inventory. From this, it seems unjustified to attribute the NO_x inventory changes in the 2016 AQMP model to the 2008-2010 recession. 58-7



8. The Targeted 43% Reduction in NO_x Levels Could Not Start Prior To 2017

The red line in Figure 5-24 of the AQMP (reproduced below) shows the necessary "glide path" to achieve an additional 43% reduction in NO_x levels by 2023, and indicates a baseline NO_x level on the order of 390 tpd in 2015. However, that baseline number has not been achieved based on current inventories. Similarly, the expectation of a gradual decrease in NO_x (red line) between 2012 and 2023 is not realistic. Accordingly, if the targeted 43% reduction in NO_x (already overstated, as noted above) is to be achieved, it will have to take place at the tail end of the 2012-2023 time period, which would more accurately describe the emission reduction challenge suggested by the current Draft AQMP's attainment modeling. Figure 5-24 should be revised so that the red dashed line begins in 2017 and is consistent with the emission reduction timing described in the Draft AQMP's descriptions of the proposed control measures.

58-8

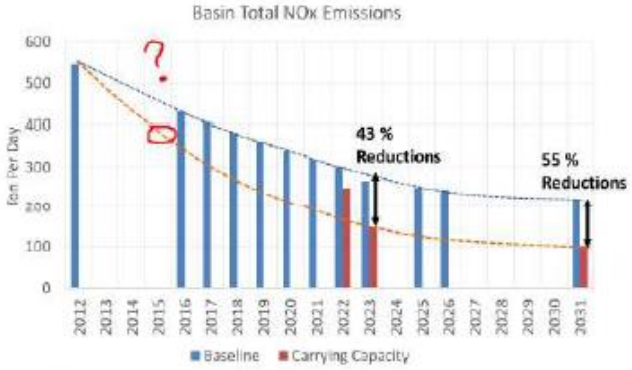


FIGURE 5-24

SUMMER PLANNING BASELINE EMISSIONS AND OZONE CARRYING CAPACITY

Conclusion

EMA appreciates the opportunity to submit comments on the Draft AQMP, but requests that the comment deadline be extended to allow for a full and fair review of the vitally important Appendix V materials. In addition, EMA urges the District not to finalize the Draft AQMP until such times as the very significant ozone modeling issues can be more fully assessed and resolved. In that regard, EMA is committing significant resources to fund additional research (to be performed by Ramboll Environ and Sonoma Technology, Inc.) into the magnitude and potential causes of the discrepancies between modeled and measured ozone values in the SCAB. An outline of the Ramboll/STI research plan is attached as Exhibit "C." As discussed at the meeting held on May 26, 2016, EMA would welcome the opportunity to collaborate and iterate on this important research initiative with the District staff, and we would welcome any feedback on the scope of work at issue.

In sum, it is clear that CMAQ, as applied by CARB and the SCAQMD, does (and will) over-predict future ozone levels in the SCAB. Consequently, the District's CMAQ-based assertions (and petition) that an 80% reduction in NO_x emissions is required to reach NAAQS attainment, and that the NO_x standard for HDOH engines must be reduced by 90% to hit that 80% reduction target, are both derived from significant over-predictions of what ozone (and NO_x) levels will be in 2031. From that, it also follows that the SCAQMD's (and CARB's) intent to enter into binding SIP commitments to adopt a new low-NO_x standard for HDOH engines (at a 0.02 g/bph-hr level) is based on an incorrect premise.

The Draft AQMP, therefore, should not be approved in its current form. In fact, and as noted above, given the consistent history of deriving over-stated results from the application of CMAQ, the Draft AQMP should not be finalized or approved until such time as CARB and the SCAQMD can complete and publish a thorough validation and dynamic evaluation of its 2016 ozone modeling efforts, as recommended by EPA, and until the results of the research proposed by Ramboll/STI can be fully considered.

Respectfully submitted,

TRUCK AND ENGINE
MANUFACTURERS ASSOCIATION

EXHIBIT A

STATE OF CALIFORNIA
AIR RESOURCE BOARD

Proposed 2016 State Strategy	)	**Board Hearing Date:**
for the State Implementation	)	**September 22, 2016**
Plan, and Draft Environmental	)	
Analysis (Appendix B)	)	

COMMENTS OF
THE TRUCK AND ENGINE MANUFACTURERS ASSOCIATION

July 18, 2016

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STATE OF CALIFORNIA
AIR RESOURCE BOARD

Proposed 2016 State Strategy for the State Implementation Plan, and Draft Environmental Analysis (Appendix B)	))))	**Board Hearing Date: September 22, 2016**

COMMENTS OF THE TRUCK AND ENGINE MANUFACTURERS ASSOCIATION

Introduction

The Truck and Engine Manufacturers Association ("EMA") hereby submits its comments on the Proposed 2016 State Strategy for the State Implementation Plan, and the accompanying Draft Environmental Analysis (hereinafter, the "2016 SIP Strategy") that the California Air Resources Board ("CARB") made available for public comment on May 17, 2016. EMA appreciates the opportunity to submit these comments on the 2016 SIP Strategy, and is doing so to help improve the accuracy and reasonableness of CARB's strategic plan to continue to improve air quality throughout California. EMA looks forward to following up with CARB staff on the important issues identified in these comments.

EMA is the not-for-profit trade association that represents the world's leading manufacturers of internal combustion engines, and the vehicles and equipment that those engines power, other than passenger cars. Heavy-duty on-highway ("HDOH") engines and vehicles are included among the array of products that EMA's members manufacture. Since a linch-pin of the 2016 SIP Strategy is the proposed adoption of new low-NO_x emission standards for HDOH engines, EMA's members have a direct and substantial interest in ensuring that the 2016 SIP Strategy is based on well-reasoned and validated emissions inventory assumptions and modeling. As explained below, that is not the case.

The 2016 SIP Strategy, as it relates to HDOH engines and vehicles, is premised on significant over-estimations of future ozone levels in the South Coast Air Basin ("SCAB"). CARB has derived those over-estimations from its use and application of the Community Multi-Scale Air Quality ("CMAQ") model, which, as applied by CARB, consistently has over-predicted future ozone levels in the SCAB for the past 25 years, including as recently as 2012 when CARB developed its last SIP submissions. In light of those consistent over-predictions of ozone, CARB's assertion that ozone attainment requires an additional 90% reduction in NO_x emissions from HDOH engines and vehicles – over and above the rigorous NO_x-control regulations that are already in place – is simply not supported by the actual facts. While some future HDOH emission requirements may prove to be warranted and reasonable, the assumed premise for adopting a 90% lower NO_x standard in 2019 is flawed and incorrect.

CARB's EMFAC model – the tool for estimating future levels of individual precursor emission, and in particular NO_x – also is over-estimating the magnitude of future-year emission inventories, and is utilizing emission inputs and related data that are significantly out-of-date. This, too, is a fundamental problem that CARB should remedy before adopting any specific menu of SIP strategies, especially strategies that are estimated to cost in excess of $10 billion.

CARB's assertion that it is justified in proposing to adopt non-aligned "Phase 2" greenhouse gas ("GHG") emission standards for HDOH vocational vehicles is similarly flawed. Specifically, CARB asserts that it intends to "layer additional requirements for vocational vehicle aerodynamics onto the federal Phase 2 program." (2016 SIP Strategy, p. 52.) That proposal is unreasonable.

The feasibility and cost-effectiveness of the Phase 2 GHG program (which will be finalized near the end of July) is premised upon complete alignment and harmonization between U.S. EPA and CARB. HDOH vehicle manufacturers cannot afford to build separate vehicles to meet California's purported need for unique incremental GHG requirements. Moreover, the notion that enhanced aerodynamics features are suitable for vocational vehicle applications is wrong. The very broad array of vocational vehicle applications, from dump trucks and garbage trucks to transit buses and school buses, and the urban and multi-purpose drive cycles over which they operate, are fundamentally ill-suited to enhanced aerodynamics. That is the reason why U.S. EPA -- which in this instance has the exact same regulatory interest as CARB -- eschewed requiring enhanced aerodynamic performance for vocational vehicles. Putting a vocational vehicle on California roads or placing that vehicle under CARB's jurisdiction does not change the fundamental aerodynamic limitations under which vocational vehicles operate.

CARB Has Failed To Provide
For A Fair Notice And Comment Process

As an initial matter, CARB has failed to provide for a fair and reasonable notice and comment process relating to the 2016 SIP Strategy. Specifically, CARB has based its 2016 SIP Strategy, and each of the proposed control measures, on the numerous modeling files and results that CARB and the SCAQMD have developed for the SCAQMD's 2016 Air Quality Management Plan ("AQMP"). While the text of the AQMP was just released on June 30, 2016, the underlying modeling files and results have not been made available for public review and comment. That is a clear abrogation of administrative due process, and should require a new notice and comment process when the data and methods underlying the 2016 AQMP become publicly available. In that regard, all of the modeling methods, data and results that CARB and the SCAQMD are relying on their preparation of the 2016 AQMP and SIP Strategy (including all "Appendix III" and "Appendix V" materials) should be released for public scrutiny as soon as possible.

CMAQ Over-Predicts
SCAB Ozone Levels

CMAQ modeling is the cornerstone of the 2016 SIP Strategy. In that regard, "ARB and the South Coast have been collaborating on air quality modeling to provide estimates of the reductions needed to attain the ozone and $PM_{2.5}$ standards." (2016 SIP Strategy, p.12.) The resultant estimates from those collaboratory modeling runs of the necessary emission reductions are very large. As CARB explains:

> Current modeling indicates that NO_x emissions will need to decline to approximately 130 tons per day (tpd) [in the SCAB] in 2023, and 90 tpd in 2031 to provide for attainment in the remaining portions of the region that do not yet meet the standards. Reaching these levels will require an approximate 70 percent reduction from today's levels by 2023, and an overall 80 percent reduction by 2031. (Id.)[1]

Based on those same modeling efforts, CARB is proposing to adopt in 2019 low-NO_x standards that will "provide 90 percent overall NO_x emission reductions from the current engine and emission control technologies." (2016 SIP Strategy, p.49.) "For heavy-duty vehicles, the State SIP Strategy calls for combustion engine technology that is effectively 90 percent cleaner than today's standards." (2016 SIP Strategy, p. 4.)

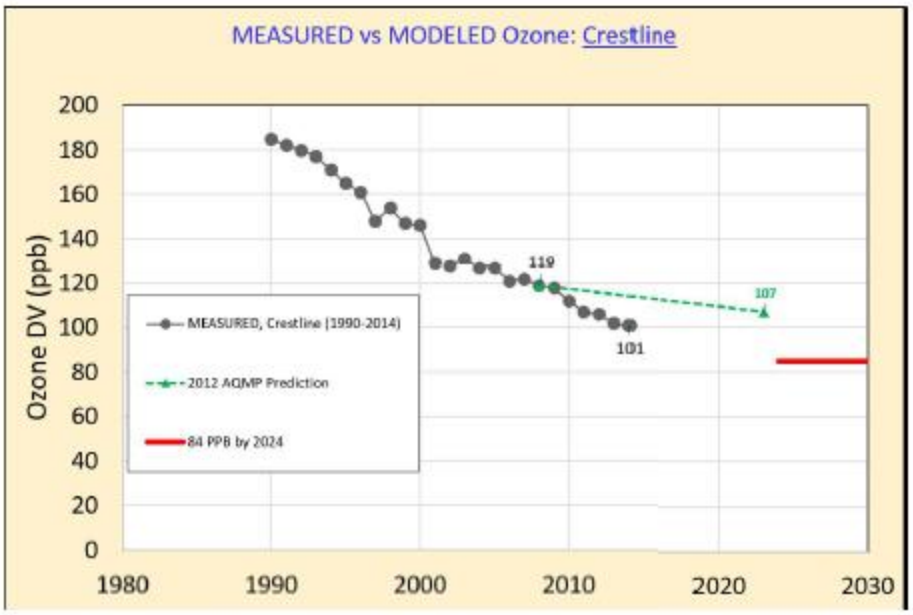
As noted above, CARB's call for an additional 90% reduction of the NO_x standard applicable to HDOH engines is premised on its utilization and application of CMAQ in a manner that consistently has over-predicted future ozone levels in the SCAB. EMA has worked with leading experts from Ramboll Environ to develop comprehensive analyses comparing CMAQ-modeled levels of ozone in the SCAB against actual monitored levels of ozone in the SCAB (hereinafter, the "Ramboll Analysis"). In addition, EMA is working with Sonoma Technology, Inc. ("STI") to perform additional analyses of NO_x and VOC trends, and to develop detailed comparisons between the available ambient data and the modeled emissions inventories for the SCAB. The Ramboll Analysis shows that, dating back to 1990, monitored levels of ozone have declined at a rate (ppb/year) that is 2 times faster than the CMAQ-modeled levels. The performance of CMAQ has been even worse over the more recent time period (2008-2014), during which time the observed and monitored trend in the reduction of ozone (on a ppb/year basis) has been 2 to 8 times faster than the CMAQ-predicted trend.

The specifics of the Ramboll Analysis bear this out. It is undisputed that at 14 out of 16 air quality monitoring stations in the SCAB, actual measured levels of ozone already were significantly lower in 2014 than the ozone levels that CMAQ predicted (for purposes of the 2012 SIP) would be achieved in 2023. Stated differently, actual ozone results already were significantly better in 2014 than the results CMAQ predicted for 2023, a full nine years later. The following chart depicts this significant disparity (all units are in ppb):

[1]It is very interesting to note that the 2016 AQMP asserts a different conclusion in this regard. The AQMP claims that "[t]he carrying capacities, the maximum allowable NO_x emissions to meet the ozone standards, are estimated to be 150 TPD NO_x in 2023 [not 130 tpd], and 100 TPD NO_x in 2031 [not 90 tpd]. (See AQMP, p.5-9.) Consequently, it is clear that, at best, one of those sets of estimates, either CARB's or the SCAQMD's, is wrong.

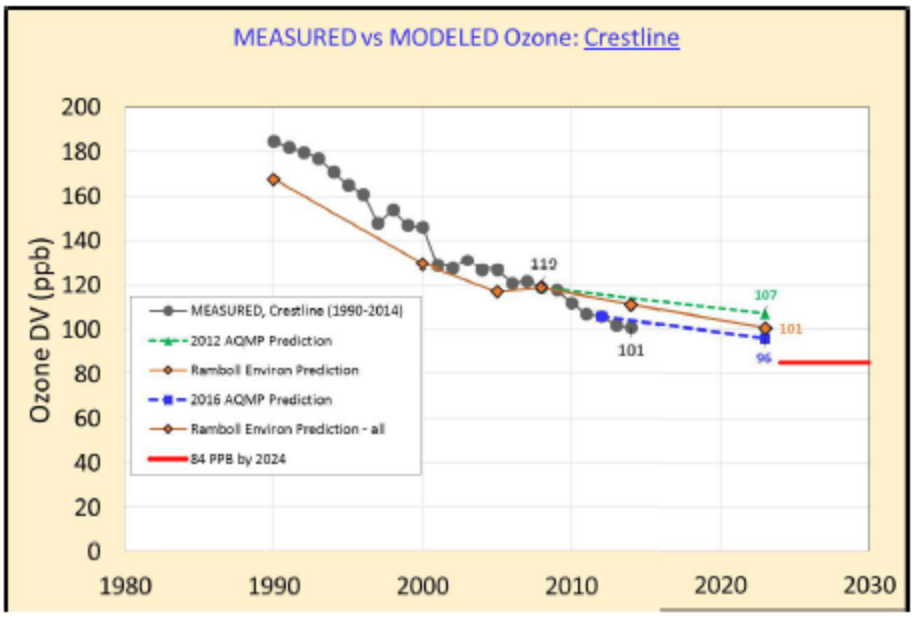
Location	2014 measured O_3 DV	2023 projections (Table 5-5, 2012 AQMP)
San Bernardino	97	108
Crestline	101	107
Glendora	93	107
Upland	96	106
Fontana	99	104
Redlands	102	103
Riverside	93	100
Pomona	86	100
Azusa	80	95
Santa Clarita	97	94
Banning	93	94
Pasadena	78	92
Reseda	87	90
Perris	89	88
Lake Elsinore	82	85
Burbank	00	76
Basin-Wide Max	102	108

The Ramboll Analysis explored this disparity in greater depth. Specifically, that analysis assessed, on a year-by-year basis, how CMAQ-modeled ozone levels and trends compare against actual monitored ozone levels and trends. Set forth below is an example of such a detailed comparison, focusing on the Crestline monitoring site, which historically has been the highest "design value" for the SCAB.

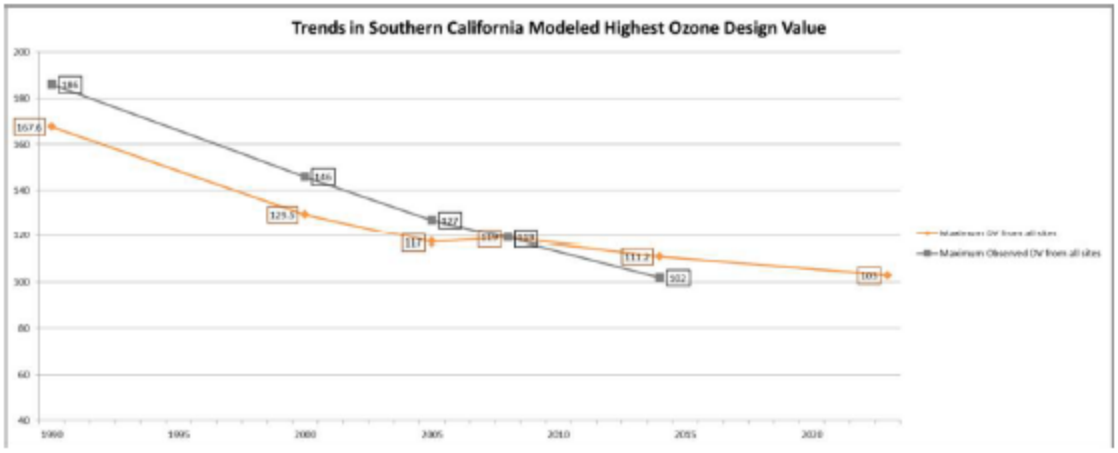


The foregoing chart compares the trend line for actual ozone reductions against the trend line that CARB derived in 2012 using CMAQ (and utilizing a 2008 base year). As is evident from the chart, the actual monitored ozone value at Crestline in 2014 (101 ppb) was significantly better than the CMAQ-predicted value for Crestline in 2023 (107 ppb). Moreover, the trend line that CMAQ predicted (just four years ago as a component of the 2012 SIP submissions) was much flatter, and much less responsive, than the trend line for the actual ozone reductions observed at Crestline. Significantly, the same holds true at almost every other monitoring site in the SCAB as well.

To check on the responsiveness of the CMAQ model, the Ramboll Analysis performed a "dynamic evaluation," including "backcasts" using CMAQ, and modeled past ozone levels that could be directly compared on a year-to-year basis against actual monitored ozone levels. Once again, those backcasts confirmed that the CMAQ-derived trend lines were flatter and less responsive than the actual trend lines, not just with respect to forecasted ozone levels, but against past ozone levels as well. CMAQ's lack of responsiveness is depicted in the following chart (see the orange line) for the Crestline monitoring site.



The phenomenon observed at Crestline – that both forecasted and backcasted ozone trends derived from CMAQ are flatter and less responsive than actual monitored trends—also holds at almost every other monitoring site in the SCAB. The net result is that CMAQ-modeled ozone forecasts, as developed by CARB, have been and are over-predicting future ozone levels in the SCAB. In addition, it also is clear that actual ozone levels in 2014 already were significantly lower than the ozone levels that CARB forecasted for 2023, and that the actual rates of decline in ozone levels in the SCAB (on a ppb/year basis) are greater than the CMAQ-modeled rates by a factor ranging from 2 to 8, as depicted in the following charts:



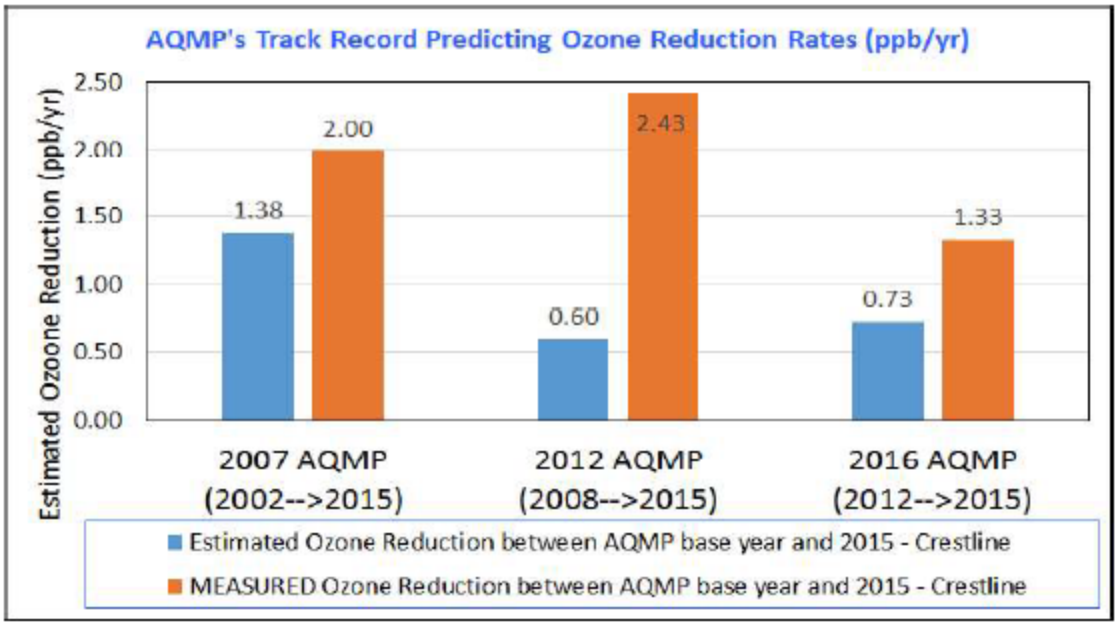
Location	Measured ΔO_3 (ppb)	Modeled ΔO_3 (ppb) [2012 AQMP]	Measured/Modeled ΔO_3
Azusa	-16	-2	8
Crestline	-18	-9	2
Fontana	-13	-2	7
Glendora	-14	-2	7
Pomona	-17	-4	4
Redlands	-14	-7	2
Riverside	-14	-6	2
San Bernardino	-19	-5	4
Santa Clarita	-8	-5	2
Upland	-14	-2	7
Basin-Wide Max	-17	-8	2

Rebutting the clear facts that the Ramboll Analysis has brought to light requires more than just a claim that CARB's 2016 runs of CMAQ (utilizing a 2012 base year instead of a 2008 base year) will be better. Simply anchoring CMAQ in more contemporary emissions inventory data does nothing to answer the question of why CMAQ, as applied by CARB, has been consistently biased for more than 20 years in a manner that is less responsive than the actual response of ozone formation in the actual environment. Moreover, there is no evidence that CARB's "do-overs" of its NO_x and VOC inventory estimates, and its corollary CMAQ modeling runs, yield any better forecasted results. In fact, the relevant evidence clearly suggests the contrary.

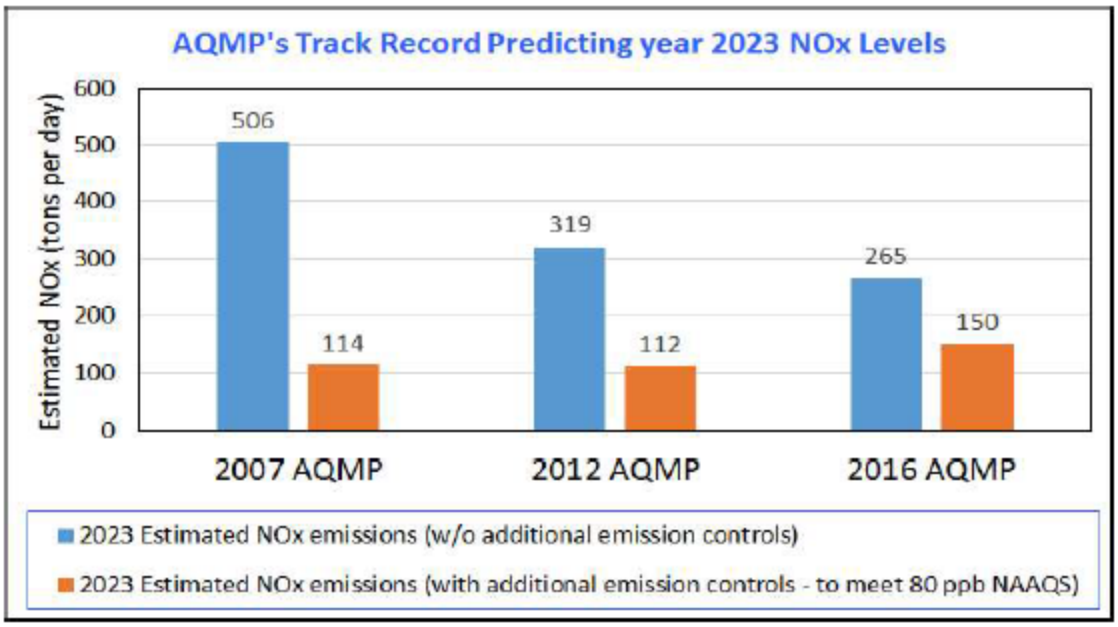
For example, just four years ago, in 2012, CARB re-ran CMAQ (utilizing a 2008 base year) to prepare its 2012 SIP submissions. By 2014 – in a span of just 2 years – the CMAQ modeled results were already off by nearly 15% at the SCAB design value site (Crestline), projecting an ozone level in 2014 of approximately 115 ppb, when the actual measured ozone level was 101 ppb in 2014. (See chart, supra.) Similarly, as confirmed by the just-released draft 2016 AQMP (albeit released without the necessary Appendix materials), between the time of the 2012 SIP submittals and the 2016 updates – just a 4-year time period – the estimate of the baseline NO_x inventory for 2023 dropped from 319 tpd to 265 tpd. That amounts to a 17% difference between the two modeling efforts over just a 4-year interval.

In addition, the projections of the SCAB's NO_x carrying capacity in 2023 have increased from an estimate of 112 tpd in the 2012 SIP to an estimate of 150 tpd in the 2016 SIP – a 34% increase in the SCAB's estimated NO_x carrying capacity in just 4 years. The estimates of the additional NO_x reductions purportedly required to demonstrate attainment are equally varied and imprecise. Specifically, the draft SIP submissions now assert than an additional 43% reduction in NO_x emissions is required by 2023. Just four years ago, however, the 2012 SIP asserted that an additional 65% reduction was necessary. That again amounts to a 34% difference or error between the estimates relating to the nearer-term ozone NAAQS attainment date. The estimates pertaining to the longer-term attainment date in 2031 are certainly even more error-prone and imprecise. Thus, based on past performance, there is no indication that the current round of CMAQ-derived predictions will prove to be more reliable than the last.

The following charts depict the manner in which CARB has been under-predicting ozone reduction rates and over-predicting NO_x levels in the SCAB since 2007, a period encompassing the preparation of three SIP submissions (and AQMPs) utilizing CMAQ.



(The AQMP ozone reductions are calculated between the base year and 2023. For the purpose of this chart, the rate of those reductions is assumed to be the same (linear) between the base year and 2015.)



In light of the consistent and significant discrepancies between modeled and measured levels of ozone and NO_x in the SCAB, CARB should not finalize or approve the 2016 SIP Strategy until such time as CARB's latest projections can be fully assessed and validated. To that end, and before seeking approval of the 2016 SIP Strategy, CARB should utilize the validation methods and analyses that U.S. EPA recommends, including "dynamic evaluations" that assess and take into account the past performance of air quality modeling efforts.

This is not simply an academic concern. The costs of erroneous projections are extremely high. In fact, the SCAQMD is anticipating that its draft AQMP will have an implementation price tag ranging from $10-$12 billion. Those enormous costs raise very serious questions about the unintended adverse consequences of flawed air quality modeling and emission inventory estimates. Those questions became even more pointed when the actual current rate of progress in reducing ozone levels is considered.

The draft AQMP states (at p.5-4) that the measured 8-hour ozone design value in the SCAB has been declining at a rate of 2.3 ppb per year over the 14-year period from 2001 to 2014. At that same rate, the ozone level at Crestline (which was 101 ppb in 2014) would be 80 ppb in 2023 and 62 ppb in 2031. That rate of decline would result in an ozone level that would be well below the targeted attainment level in 2031 and very near attainment in 2023, without any additional control measures whatsoever. All of this cautions against finalizing a $12 billion SIP Strategy before each of the very significant modeling uncertainties at issue is resolved.

It is clear that CMAQ, as applied by CARB and the SCAQMD, does (and will) over-predict future ozone levels in the SCAB. Consequently, CARB's CMAQ-based assertions that an 80% reduction in NO_x emissions is required to reach NAAQS attainment, and that the NO_x standard for HDOH engines must be reduced by 90% to hit that 80% reduction target, are both derived from a significant over-prediction of what ozone (and NO_x) levels will be in 2031. From that, it also follows that CARB's intent to enter into a binding SIP commitment to adopt a new low-NO_x

standard for HDOH engines (at a 0.02 g/bph-hr level) is based on a significantly flawed premise. The 2016 SIP Strategy should not be approved in its current form. In fact, and as noted above, given CARB's consistent history of generating over-stated results through its application of CMAQ, the 2016 SIP Strategy should not be finalized or approved until such time as CARB can complete and publish a thorough validation and dynamic evaluation of its 2016 ozone modeling efforts, as recommended by EPA.

Underlying NO_x Inventories
Are Substantially Overstated

CARB's estimates of future reductions in ambient levels of NO_x and total NO_x emissions, both with and without additional NO_x-control measures, are only as reliable as CARB's emission inventory assessments and models. If past is prologue, the reliability of CARB's estimates of future NO_x levels in the SCAB is highly questionable and uncertain. That uncertainty is compounded by the fact that the 2016 AQMP NO_x inventory estimates have not been available for review and public comment (specifically, Appendix III and Appendix V). Nonetheless, even without knowing what the updated and detailed 2016 numbers might be, there are a number of well-known problems with CARB's NO_x inventory estimates that need to be addressed and corrected before CARB finalizes the 2016 SIP Strategy.

Zero-Mile Emission Rates

CARB uses EMFAC to estimate real-world in-use emissions from various sources, including HDOH vehicles. CARB has utilized EMFAC to develop state-wide and district- specific NO_x inventories for several decades, and EMFAC is updated at regular intervals to make changes in modeling methods, and to incorporate the impact of new emission standards and other emission reduction programs.

The current version of EMFAC is referred to as "EMFAC2014" and was released in December of 2015. Counter-intuitively, EMFAC2014 significantly *increased* the estimate of NO_x emissions from HDOH vehicles equipped with 2010 and later model year heavy-duty engines, as compared with the previous version of EMFAC – which was referred to as EMFAC2011.

EMFAC's estimate of the in-use emissions from HDOH vehicles takes several factors into consideration, including vehicle type, mileage, speed, load and deterioration. The fundamental underlying emission rate, however, is referred to as the "zero-mile rate" or "ZMR." The ZMR is meant to represent the emission rate for new (and relatively new), well-maintained HDOH vehicles operating on California roads, and is subject to various adjustment factors, including speed correction factors. The ZMR is expressed in units of grams/mile ("g/mi") and varies with vehicle size, tare (unloaded) weight, and load factor. All else being equal, the ZMR increases with vehicle size, tare weight and load factor.

The certified emission rates for HDOH vehicles and engines are different and utilize a different metric. HDOH engines are certified separately on an engine dynamometer to standards expressed in units of grams/brake horsepower–hour ("g/bhp-hr"). Since the denominator for this standard is, in essence, work performed, the standard can be a constant, and does not vary with engine size or power rating.

The historical "rule of thumb" is that the in-use NO_x emissions from a Class 8 line-haul truck (which are in units of g/mi) operating on California roads over a duty cycle similar to the certification test procedure (i.e., the "UDDS transient cycle") are generally assumed to be 3.5 times the engine dynamometer-based certification emission standard (which is in units of g/bhp-hr). This "rule of thumb" ratio, or conversion factor, is a function of calculating (g/mi)/ (g/bhp-hr) or bhp-hr/mi, and, generally, represents the work needed to move a Class 8 line-haul truck one mile.

The NO_x emission standard for 2010 and later model year heavy-duty engines is 0.20 g/bhp-hr. Therefore, the general "rule of thumb" estimate of the in-use ZMR NO_x emission rate for a Class 8 line-haul truck over the representative UDDS duty cycle is 0.70 g/mi (0.20 x 3.5 = 0.70).

Significantly, the ZMR for 2010 model year and later Class 8 line-haul trucks that is used in EMFAC2014 is 1.89 g/mi. Obviously, this is much higher – nearly three (3) times higher – than the "rule of thumb" estimate (which, as noted, would be 0.70g/mi). By contrast, the analogous ZMR in the prior version of EMFAC (EMFAC2011) was 1.14 – markedly lower than the EMFAC2014 value. This calls into question whether the ZMR for HDOH vehicles in EMFAC2014 is materially over-estimating the actual emissions from 2010 and later model year HDOH vehicles.

The EMFAC2014 ZMR for HDOH vehicles was based on very limited testing that CARB and the SCAQMD conducted at CARB's chassis-dynamometer test facilities in Los Angeles. Specifically, eight HDOH vehicles were tested, three powered by engines certified to the 2007 through 2009 model year requirements, and just five certified to the 2010 and later standards. Of those five engines, however, only two (2) were actually certified to the 0.20 g/bhp-hr NO_x standard; the other three used emissions credits and were certified to a level above the 0.20g/bhp-hr NO_x standard. Further, the two engines certified to the 0.20 NO_x standard – already an unreasonably small sample size – were both produced by the same engine manufacturer.

The first of those two 0.20g vehicles was powered by a 2010 model year engine, and recorded a 1.95 g/mi NO_x level when tested over the UDDS test cycle. The second vehicle was powered by a 2011 model year engine, and yielded a 1.98 g/mi NO_x level when operated over the UDDS cycle. As noted, the UDDS cycle is a chassis-dynamometer-based test cycle that, when the proper loading is applied to the vehicle being tested, is reasonably similar to the engine-dynamometer transient certification test.

Due to the important policy and regulatory impacts of EMFAC modeling, as well as in light of the very small number of vehicles – just two – on which CARB's ZMR result is based, EMA arranged for a follow-up ZMR study. EMA contracted with CE-CERT to perform the ZMR study, and coordinated with CARB in setting up the test plan to ensure that the results could be directly compared against the results of the original CARB/SCAQMD ZMR study.

Based on the joint input from EMA and CARB, the CE-CERT study involved testing five late-model year, low-mileage heavy-duty line-haul vehicles produced by a variety of manufacturers that participate in the HDOH market. The same battery of tests as run in the original ZMR study were performed at CE-CERT with the vehicles loaded to the same level and otherwise tested under the same circumstances. CARB requested and arranged to have three of the five vehicles tested at its Los Angeles facility.

The average validated results for the vehicles tested at CE-CERT yield a significantly different result than what is assumed in EMFAC2014. Specifically, the average "rule of thumb" or conversion ratio – that ratio being the UDDS value divided by certification NO_x standard of 0.20 -- of the HDOH vehicles tested and validated at CE-CERT is 4.04, reasonably close to the expected "rule of thumb" scaling factor of 3.5. That corresponds to an average UDDS level of 0.81 g/mi. Since the tested vehicles all had low accumulated mileage, the 0.81 g/mi value would be a good approximation for the ZMR. That value is well below – more than two times below -- the EMFAC2014 ZMR value of 1.89 g/mi, and provides clear evidence that the current version of EMFAC is programmed in a manner to yield materially over-stated estimates of future-year NO_x emissions. EMFAC clearly needs to be revised.

Unreasonable TM&M Rates and Impacts

EMFAC2014's incorporation of unreasonably over-estimated tampering, malfunction and malmaintenance ("TM&M") rates, and its inclusion of unreasonably over-estimated emission increases ascribed to those incidences of TM&M, also raise significant concerns regarding the model's accuracy. In that regard, CARB did not update the TM&M assumptions that were used in the earlier versions of EMFAC. Those assumptions, however, are based principally on surveys of trucking fleets and repair facilities conducted in 1988 (a study conducted for CARB by Radian Corporation) and in 1998 (a study for EPA conducted by Engine, Fuel and Emissions Engineering, Inc.) – surveys prepared some 28 and 18 years ago. Quite obviously, those earlier surveys are long out-of-date, and include many assumptions that no longer pertain to recent and current model year HDOH vehicles that operate with advanced electronically-controlled after-treatment systems, fully integrated and comprehensive OBD systems, and multiple "inducements" to ensure emissions compliance.

An example of the out-of-date TM&M assumptions that CARB continues to rely on in the current version of EMFAC is set forth in the attached "Appendix C" from CARB's earlier technical support document for EMFAC. That Appendix lists the assumed lifetime TM&M rates and NOx emissions impacts for 2010 and later model year HDOH engines. Even with OBD requirements factored in, CARB assumes that over the assumed 1,000,000-mile life of a HDOH vehicle, more than 40% of those miles will be driven by vehicles having a failed NOx sensor, and that more than 12% of all miles will be driven by HDOH vehicles with a continuously malfunctioning NOx aftertreatment system, yielding a 200% to 300% increase in NOx emissions over all of those miles. Those types of over-stated and outdated assumptions have a very material impact on the modeled level of future NO_x emission inventories. In fact, the net effect of those TM&M assumptions is that the modeled NO_x level for each and every 2010 and later model year vehicle increases by .07 g/mi every 10,000 miles, starting off at near 2 g/mi and ending up (at the 1,000,000 mile mark) at 9 g/mi. That is more than 11 times higher than the reasonable ZMR of 0.81 g/mi for the relevant HDOH vehicles.

In an effort to improve EMFAC (and thereby avoid the unreasonable consequences of inaccurate and overstated emission inventories), EMA is working to develop better and more accurate information relating to actual TM&M rates for recent and current model year HDOH engines, and the likely resultant impacts on emissions from potential incidences of TM&M. Such an updated database would enable EMFAC to incorporate actual rates (and declining trends) of malfunctions for current HDOH vehicles, coupled with current assessments of emissions impacts, as opposed to CARB's assumed rates based principally on surveys conducted in 1988 and 1998.

CARB's assumptions, and the current EMFAC model, also fail to account for the mitigating effects of comprehensive OBD systems as well as the advanced "inducement" systems that de-power or disable the re-start function of HDOH vehicles that are experiencing potential emission-related problems, specifically those that could increase NO_x emissions. The inducements that EPA and CARB require as a condition for the certification of current model HDOH vehicles preclude any significant amount of miles of operation of any HDOH vehicle that has any malfunctioning SCR-related components. Those inducements, and the related OBD requirements, do not expire or shut-off at 500,000 miles (as implicitly assumed in EMFAC), and quite simply eliminate many if not all of the most significant NO_x increases from TM&M that CARB is still including in EMFAC – again, based on studies dating back to 1988. Indeed, as CARB itself noted in its January 2013 Field Evaluation Report:

> CARB staff believes that companies and truck operators will simply not tamper with the HDD vehicles and risk costly repairs and/or possible fines, especially when those vehicles will cause the engine's power to degrade causing delivery delay and general inconvenience.

EMFAC's increase in NO_x emissions for 2010 and later HDOH vehicles by multiples of the underlying emission standard after 500,000 miles is significantly over-stated and will drive unreasonable and significantly over-stated estimates of future NO_x inventories. EMFAC must be revised to account for the mitigating impacts of comprehensive OBD systems and inducements. Otherwise, CARB's SIP Strategy will be premised on unreasonable emissions data, in addition to flawed modeling.

CARB's Intent to Pursue
Separate GHG Standards For
Vocational Vehicles Is Misguided

The 2016 SIP Strategy also includes CARB's proposed commitment to adopt medium and heavy-duty GHG "Phase 2" standards to harmonize with the GHG "Phase 2" standards that U.S. EPA will finalize near the end of July. However, CARB's proposed SIP commitment goes well beyond harmonization. Specifically, CARB's proposal "may include some more stringent, California-only provisions that are necessary to meet California's unique air quality challenges. For example, the California Phase 2 proposal may layer additional requirements for vocational vehicle aerodynamics onto the federal Phase 2 program." (2016 SIP Strategy, p.52.)

CARB should not include a California Phase 2 proposal in the 2016 SIP Strategy, which is focused on ozone attainment in the SCAB. Such a proposal is not germane to the SIP process, is not necessary, and is not reasonable. Full harmonization between U.S. EPA and CARB on the anticipated Phase 2 GHG standards is a basic prerequisite to their feasibility and cost-effectiveness. Separate CARB standards therefore are directly at odds with the core Phase 2 rulemaking premise that there will be one nationwide set of next-phase GHG standards. Further, the notion that there are additional enhanced requirements for "vocational vehicle aerodynamics" that CARB can devise and implement in a feasible and cost-effective manner is unfounded. Vocational vehicles are not suited to an enhanced "layer" of aerodynamic demands. Those vehicles spend a significant percentage of time in parked-idle or drive-idle modes; they routinely engage in stop-and-go operations; they typically operate at non-highway speeds and in non-cruise driving modes; and they otherwise operate on (and are certified on) urban and multi-purpose drive cycles that do not

lend themselves to enhanced aerodynamics. Indeed, less than 5% of vocational vehicles operate on the regional duty cycle that theoretically might accommodate increased aerodynamic performance.

Further, as expressly conceded in the 2016 SIP Strategy (see id. at p.52), CARB has not attempted to quantify the "criteria emission reductions" that might result from California-only Phase 2 requirements. Thus, in addition to being entirely out of context in an ozone SIP Strategy, CARB's envisioned Phase 2 GHG add-ons are not calculated to yield any benefits for the attainment demonstrations at issue.

More fundamentally, U.S. EPA – which has the same regulatory objective as CARB – has carefully examined the appropriate Phase 2 GHG standards for vocational vehicles. EPA has determined properly that, for all the reasons noted above (and more), enhanced aerodynamic requirements are not appropriate for vocational vehicles. CARB should not assume in its SIP Strategy that a different conclusion is warranted.

Conclusion

The 2016 SIP Strategy, as it relates to HDOH engines and vehicles, is premised on significant over-estimations of future NO_x and ozone levels in the South Coast Air Basin ("SCAB"). CARB has derived those over-estimations from an outdated version of EMFAC and from its application of the Community Multi-Scale Air Quality ("CMAQ") model, which consistently has over-predicted future ozone levels in the SCAB over the past 25 years, including as recently as 2012 when CARB developed its last SIP submissions. In light of those consistent over-predictions of NO_x and ozone, CARB's assertion that ozone attainment in 2031 requires an additional 90% reduction in NO_x emissions from HDOH engines and vehicles – over and above the rigorous NO_x-control regulations that are already in place – is simply incorrect. While some future HDOH emission requirements may prove to be warranted and reasonable, the assumed premise for adopting a 90% lower NO_x standard in 2019 is fundamentally flawed. As a result, the 2016 SIP Strategy needs substantial revision, and should not be approved or adopted in its current form.

Similarly flawed is CARB's intended adoption of unique California-only Phase 2 GHG requirements for vocational vehicles. Separate California GHG requirements are directly at odds with the core premise of the pending U.S. EPA rulemaking for a nationwide Phase 2 GHG program, and are inherently unreasonable given the aerodynamic constraints under which vocational vehicles operate.

EMA appreciates the opportunity to submit these comments on the 2016 SIP Strategy, and we look forward to working with CARB staff to improve the accuracy of the underlying CMAQ and EMFAC models.

Respectfully submitted,

TRUCK AND ENGINE
MANUFACTURERS ASSOCIATION

Appendix C. Frequency of Occurrence of T&M and Malfunction and Resulting Emission Impact for 2010+ Model Year HHDD Trucks

Tampering and malmaintenance (T&M) and malfunction rates were developed for the model year group of 2010 and subsequent model year heavy-duty vehicles. This appendix provides a description of the frequency of occurrence of T&M and malfunction categories and the resulting emission impact for 2010+ model year HHDD trucks (further detail can be found in the staff report for the HDV OBD regulation; see Footnote 4 of this memo).

Frequency of Occurrence Rates

The table below shows the revisions to the frequency of occurrence of T&M and malfunction categories for 2010+ model year group.

Table C1. Frequency of Occurrence of T&M and Malfunction Acts for 2010+ HHDDTs[a]

EMFAC2002		Revised		
T&M Act	2003+	T&M and Malfunction Act	2010+	
			No OBD	w/ OBD
Timing Advanced	2%	Timing Advanced	2%	**1.33%**
Timing Retarded	2%	Timing Retarded	2%	**1.33%**
Minor Injector Problem	8%	**Injector Problem (Minor/Moderate/Severe)**	13%	**8.67%**
Moderate Injector Problem	5%	**NOx Aftertreatment Sensor**	**52.7%**	**40.1%**
Severe Injector Problem	0%	**Replacement NOx Aftertreatment Sensor**	**1.8%**	**10.8%**
Puff Limiter Misset	0%	**PM Filter Leak**	**13.9%**	**9.75%**
Puff Limiter Disabled	0%	**PM Filter Disabled**	**2%**	**1.33%**
Max Fuel High	0%	**Fuel Pressure High**	0%	0%
Clogged Air Filter	15%	Clogged Air Filter	15%	**10%**
Wrong/Worn Turbo	5%	Wrong/Worn Turbo	5%	**3.33%**
Intercooler Clogged	5%	Intercooler Clogged	5%	**3.33%**
Other Air Problem	8%	Other Air Problem	8%	**5.33%**
Engine Mechanical Failure	2%	Engine Mechanical Failure	2%	**1.33%**
Excessive Oil Consumption	3%	Excessive Oil Consumption	3%	**2%**
Electronics Failed	3%	Electronics Failed	**30%**	**20%**
Electronics Tampered	5%	Electronics Tampered	5%	**3.33%**
Catalyst Removed	0%	**Oxidation Catalyst Malfunction/Removed**	5%	**3.33%**
EGR Stuck Open	0%	**NOx Aftertreatment Malfunction**	**17.1%**	**12%**
EGR Disabled	10%	EGR Disabled/**Low Flow**	**20%**	**13.3%**

a. Revised values shown in boldface (see text for discussions).

For the frequency of occurrence rates in Table C1, staff modified several of the existing components to better reflect the technology that is expected to be used on 2010 and subsequent engines as well as to account for malfunction of components in addition to tampering or malmaintenance. Specifically, staff added categories for PM filter leaks, missing/tampered PM filters, NOx aftertreatment system malfunctions, and NOx aftertreatment control sensor malfunctions. Staff eliminated the categories deemed to be not applicable to 2010+ model years, such as puff limiter misset, puff limiter disabled, and EGR stuck open. Staff also merged minor, moderate, and severe injector problems into a single injector problem category, expanded EGR disabled to include EGR low flow/performance malfunctions, and modified the category for catalyst removed to oxidation catalyst malfunction/removed. The frequency of occurrence in Table C1 represents an average failure rate over the life of the 2010+ model year vehicles.

For the baseline "without OBD" values, staff estimated various failure rates for the categories. For the existing categories in the table (except for the electronics failed category), staff did not modify the estimated failure rates. However, for the added and modified categories staff estimated failure rates based on information from manufacturers, suppliers, and, where appropriate, experience with similar components in light-duty. In all cases, staff assumed any failures occurring during the warranty period would be fixed immediately, and thus a failure rate of 0% was assumed during the warranty period.

For EGR, staff increased the failure rate from 10% to 20% to account for nearly every engine using EGR in the 2010 timeframe and for the increased sensitivity and reliance to proper EGR performance on those engines. For the oxidation catalysts, staff increased the failure rate from 0% to 5% to account for nearly every engine being equipped with a catalyst, for combining oxidation catalyst performance malfunctions with oxidation catalyst tampered/removed into a single category, and for the increased sensitivity and reliance on proper oxidation catalyst performance to achieve PM filter regeneration.

For the electronics failed category, staff increased the frequency of occurrence from 3% to 30% to account for the significant increase in complexity of the 2010+ emission control systems. For these engines, a substantial number of sensors (e.g., temperature, mass air flow, pressure) and actuators (e.g., intake or exhaust throttles) are being added and other components have become more complex (e.g., high pressure common rail fuel injection system components, variable geometry turbos). In addition to actual sensor or actuator failures, each sensor and actuator has additional circuits and wiring that increase the chance for a failure in-use.

For the added category of PM filter leak, staff estimated a failure rate that increased over time starting with an approximately 6% failure rate at the end of useful life (~450,000 miles) and ramping up to a failure rate of 37% at 1,000,000 miles. In setting this failure rate, staff largely discounted the high failure rates currently being observed in the heavy-duty fleet (both OEM-equipped and retrofit) and estimated much more conservative failure rates. For the category of PM filter disabled (largely due to tampering), staff assumed a rate of only 2%.

At present, two competing NOx aftertreatment technologies are being considered for 2010 model year applications. Accordingly, staff analyzed both systems and their associated components. It was assumed that a blend of the two would exist in the fleet, with some using a selective catalytic reduction (SCR) system with a single NOx control sensor and reductant delivery (e.g., urea) and some using a NOx adsorber system with upstream and downstream air-fuel (A/F) control sensors. For the category of NOx aftertreatment in Table C1, staff grouped together the SCR catalyst and the components associated with reductant storage and delivery or, in the case of an adsorber system, included failures of the adsorber itself. For these failures, staff again estimated a failure rate that increased over time. The failure rate for this category was ramped in starting with a 10% failure rate at 500,000 miles (50,000 miles beyond useful life) to a 50% failure rate by 1,000,000 miles. While failures of an SCR catalyst itself may be fairly limited, the associated hardware includes urea tank, tank heaters, in-exhaust injector, compressed air delivery to the injector, and urea supply pump and control system are all components subject to malfunction and can have the same emission impact as an SCR catalyst failure. In assuming that only half of the trucks left on the road at 1,000,000 miles will have experienced a failure of any one of these components at some point in its 1,000,000-mile life, staff believes the estimate is fairly conservative. For an adsorber system, the adsorber itself will likely have a significant failure rate in a 1,000,000-mile timeframe given the sensitivity to thermal damage and the need for periodic desulfation that must be conducted at temperatures extremely close to the thermal damage point. Further, each desulfation event will likely slightly deteriorate the performance of the adsorber leading to an eventual fail on some share of the engines. In some cases, adsorber systems may also rely on in-exhaust injectors, fuel supply lines, control, and metering systems that are subject to malfunction and can have a similar emission impact.

For the two NOx aftertreatment control sensor categories, a two-part failure rate was estimated and modeled as two separate categories. For SCR systems using a single NOx control sensor, the model assumes the sensor has an initial fail, some portion of those sensors are replaced, and a second fail occurs later in the life of the new sensor. For NOx adsorber systems with two A/F sensors, the model assumes one of the two sensors has an initial fail, some portion of those sensors are replaced, and a second fail occurs later in the life of the engine which could be either a failure of the replaced sensor or a an initial failure of the other A/F sensor on the vehicle.

For the initial failure in both systems, a single failure of a control sensor was estimated to ramp in starting with a 35% failure by 250,000 miles and peaking at a 90% failure rate after a subsequent 200,000 miles (i.e., by 450,000 miles). Staff based these failure rates on discussions with engine manufacturers expressing concern that they had not been convinced that NOx sensor durability was sufficient to last 100,000 miles, much less the useful life period of 450,000 miles. Discussions with sensor suppliers suggest significant potential for further improvement in durability over the next few years. Accordingly staff assumed essentially a 0% failure rate for twice the current expected life of the sensor before ramping the failure up to near complete failure at 4.5 times the current expected sensor life. Further, A/F sensors are commonplace in light- and medium-duty vehicles and Inspection and Maintenance (I/M) program data indicates these sensors are failing in I/M on approximately 2.5% of the fleet at 100,000 miles. Assuming this failure rate were to grow linearly at a failure

rate of 2.5% per 100,000 miles, that would represent a cumulative failure rate of 7.5% at 250,000 miles. Additionally, this 2.5% failure rate only includes the subset of vehicles with a malfunctioning A/F sensor vehicles that ignore an illuminated warning light and actually fail the I/M test. Data from non-I/M areas would support that the actual in-use failure rate is higher than that and is a result of a portion of the people fixing the vehicle prior to the I/M test. When adjusting that number to reflect the more realistic situation that the failure rate increases non-linearly over time, that the actual in-use failure rate in light-duty is actually higher than the 2.5% that show up in I/M, and that each engine with a NOx adsorber system is projected to use two A/F sensors, a 35% failure rate at 250,000 miles is reasonable. To further assume that 90% of the sensors will have failed once by 450,000 miles is consistent with a continued increase of the failure rate and engine manufacturers' expressed opinions that the sensors will not last through the useful life. This initial failure of the control sensor is represented in the category for NOx Aftertreatment Sensor.

The second part of the failure rate for the NOx aftertreatment control sensor categories estimates the percentage of the fleet that will repair/replace the first failed sensor and then experience a subsequent failure of the repair/replaced sensor while still within the first 1,000,000 miles of the engine life. For this failure rate, staff assumed the same sensor durability and failure rate (i.e., failure rate ramps in at 35% beginning 250,0000 miles after the previous sensor repair/replacement and peaks at 90% after an additional 200,000 miles) but only applied it to the fraction of vehicles which were estimated to already have a failed sensor and a subsequent repair. This second part of the failure rate of the control sensor is represented in the category for Replacement NOx Aftertreatment Sensor.

OBD Repair Rate

While the frequency of occurrence rates shown in Table C1 are a single number that represents the average failure rate, or probability of occurrence, the model actually assumes that there are constantly some additional failures and repairs that are occurring in the fleet. For the baseline (without OBD) scenario described above, these numbers represent the failures that are above and beyond what is being routinely repaired in the field.

To account for the adopted HD OBD program, staff estimated a repair rate for all the categories in Table C1. A 33% reduction in the frequency of occurrence across all categories was estimated to simulate the malfunctions that are repaired due to the presence of the OBD system. The rationale for the 33% repair rate was that all the malfunctions estimated in the categories would likely result in MIL illumination. It is expected that some fraction of vehicle owners or operators would take repair action simply because they were alerted to the presence of a malfunction by the MIL. Additionally, California has two inspection programs that are applicable to heavy-duty vehicles. First, the heavy-duty vehicle inspection program (HDVIP) conducts roadside testing and issues citations or notice-of-violations for trucks that fail either a snap-idle opacity test or a visual inspection. This inspection program currently tests about 6% of the heavy-duty fleet in California. Secondly, California has a fleet annual self-inspection program whereby all fleets (defined as anybody with two or more trucks) are required to perform self-inspections for snap-idle opacity on an annual basis, repair any vehicles that fail the inspection, and retain records of the inspection for review by ARB inspectors. Currently, about 75% of the California fleet is subject to this fleet self-inspection.

While both programs are currently focused on smoke emissions and visual tamper inspections, it is expected that they will both be updated to include an inspection of the OBD system and to fail vehicles that have an illuminated MIL. When combining these three factors together (voluntary response to an illuminated MIL, HDVIP inspections, and fleet self-inspections), staff believes it is fairly conservative to expect that one third of the illuminated MILs will be repaired.

Staff also considered that some malfunctions could also cause degraded drivability, performance, or fuel economy, and those impacts would also influence the repair rate. However, as stated above, these failure rates already assume that additional failures and repairs are currently occurring in the fleet and will continue to. Furthermore, in analyzing the categories created by staff, the failures with the largest emission impacts (e.g., PM filter malfunctions and NOx aftertreatment related categories) are not expected to have an adverse impact on drivability or performance and may actually result in an improvement to fuel economy, thus negating any additional incentive to repair the detected malfunction.

Malfunction Emission Rates

Staff also modified the associated emission rates for each of the categories of Table C1 to better reflect the best estimates available at this time based on the expected 2010 and subsequent emission control systems. For the existing categories that result in an increase in PM emissions, staff reduced the estimates for the PM emission increases by a factor of 0.95 based on the expectation that all 2010 engines will be equipped with a PM filter which will trap 95% of any engine-out increases in PM. For the added categories of PM filter leaks and PM filter missing/tampered, staff estimated PM increases of 600% and 1,000%, respectively. For the PM filter leaks, this represents an emission level of 0.07 g/bhp-hr, which is above the adopted OBD threshold of 0.05 g/bhp-hr but reflects industry's contention that most PM filter leaks will rapidly grow beyond a small leak. For the category of PM filter missing/tampered, staff estimated the emissions would approach that of an engine without a PM filter for an increase of 1000% (to 0.10 g/bhp-hr).

For HC emission rates for the existing categories, staff estimated the presence of larger oxidation catalysts to achieve sufficient exotherms for PM filter regeneration would convert 50% of any increases in engine-out HC rates and thus reduced the HC emission increases by a factor of 0.5. For the added categories related to PM filters and malfunctions associated with NOx aftertreatment or the aftertreatment control sensors, staff assumed a small HC increase due to reduced conversion of HCs within the PM trap itself or improper reductant malfunctions (e.g., overdosing fuel in a NOx adsorber system). For a malfunction of the oxidation catalyst itself, staff assumed a 50% increase in HC emissions.

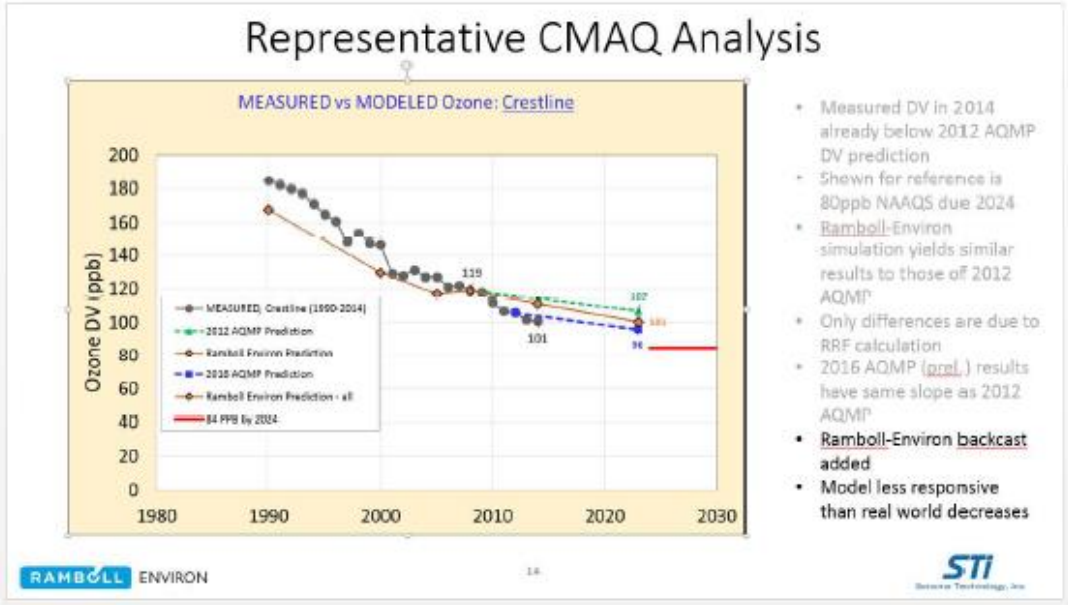
For NOx emission rates for those existing categories, staff estimated that engine-out NOx increases would be reduced by the presence of NOx aftertreatment to varying degrees. For smaller engine-out NOx increases, the aftertreatment was estimated to convert 75% of the excess NOx (thus reducing the emission rate by multiplying by a factor of 0.25). For larger engine-out NOx increases, a lower aftertreatment conversion efficiency (65%) was used to reflect the reduced ability of the system to handle large feed gas concentration increases. For the added categories of NOx aftertreatment control sensors, an emission increase of

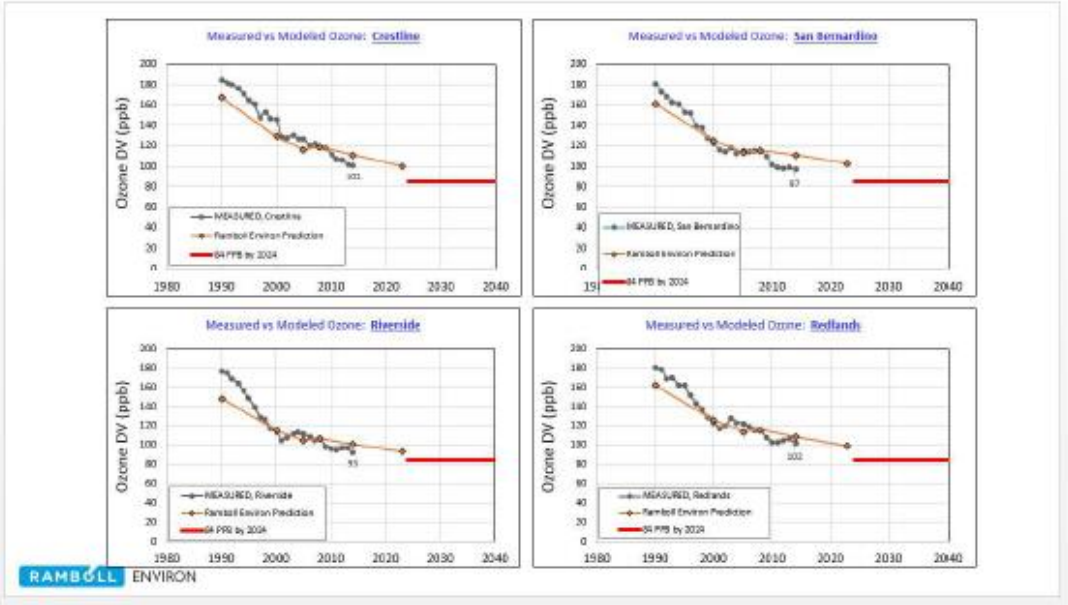
200% (to a tailpipe emission level of 0.6 g/bhp-hr NOx) was assigned based on the assumption that a loss of feedback control (either a NOx sensor for SCR or an A/F sensor for an adsorber) would result in significantly lower NOx conversion rates because the system would likely shut off reductant delivery or go into a conservative open loop operation that injects minimal reductant to minimize the risk of overdosing or inefficient use of reductant. For the added category of NOx aftertreatment, a failure was calculated to have a 300% increase (to reflect a tailpipe emission level of 0.8 g/bhp-hr NOx). This represents an intermediate level between an MIL failure (at 0.5 g/bhp-hr) and a complete loss of NOx aftertreatment (at 1.2 g/bhp-hr). Considering that this category includes failures of the SCR catalyst or adsorber itself as well as failures of the reductant delivery system (exhaust injectors, reductant tank, reductant delivery lines, reductant metering, reductant heaters, and compressed air delivery system), many of which would likely result in shutting off reductant delivery or defaulting to open loop operation, a 300% emission increase seems to be appropriate. Staff also adjusted the emission rates and frequency of occurrence rates for both the NOx aftertreatment system category and the NOx aftertreatment sensor categories to properly account for the combined emission impact (e.g., an engine with a failure in both categories will get a 300% NOx increase, not a combined 200% NOx increase from the aftertreament control sensor failure and an additional 300% NOx increase from the aftertreatment failure). Lastly, while there is a category for EGR malfunctions in EMFAC, the NOx emission increase associated with an EGR failure was previous set to a 0.0% increase. This was modified to a NOx emission increase of 150% (to a tailpipe level of 0.5 g/bhp-hr NOx). This emission rate was calculated by assuming a complete loss of EGR would cause engine-out NOx to go from 1.2 to 2.4 g/bhp-hr for an increase of 1.2 g/bhp-hr and then assuming that the NOx aftertreatment would convert 60% of that increase leaving a tailpipe increase of 0.48 g/bhp-hr. Thus, EGR failures were estimated to range from the OBD MIL on point of 0.3 g/bhp-hr to a complete loss of EGR at 0.68 g/bhp-hr with a nominal middle failure point of 0.5 g/bhp-hr.

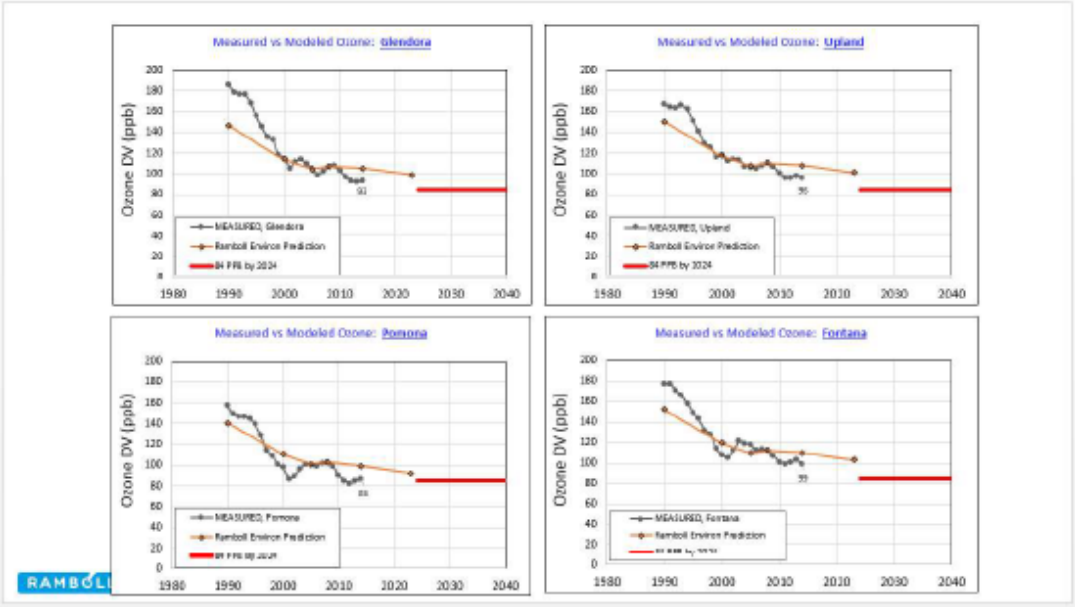
EXHIBIT B

Excerpt from Presentation given by Ramboll-Environ to ARB and SCAQMD

- See linearity of CMAQ ozone predictions between 2008 and 2023, demonstrated by equal slopes between 2008-2014 and 2014-2023, for all monitoring sites analyzed.



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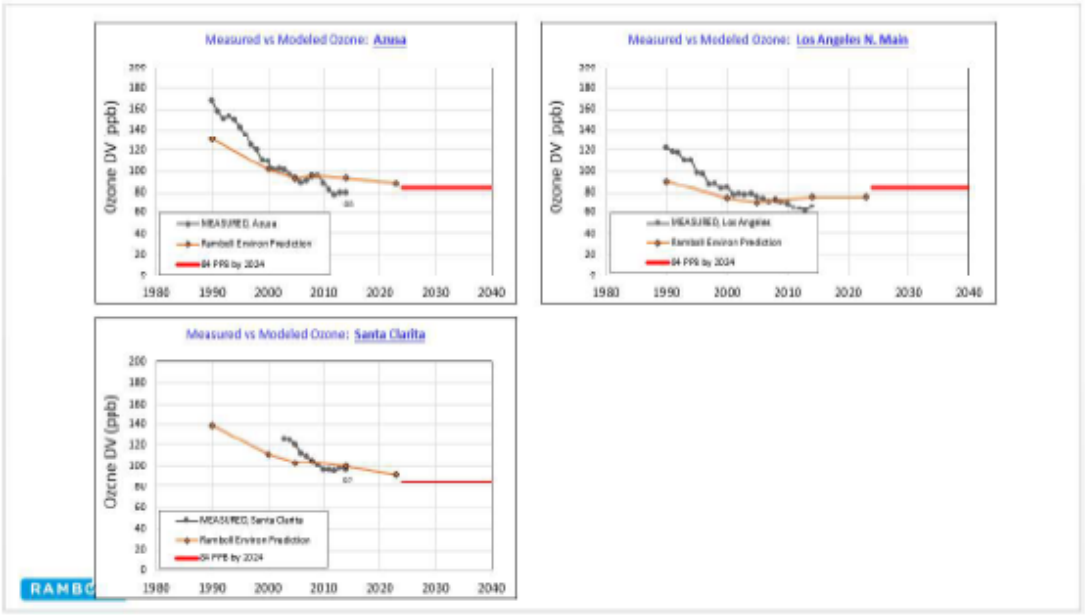
Measured vs Modeled Ozone: Upland
Measured vs Modeled Ozone: Pomona
Measured vs Modeled Ozone: Fontana
Ozone DV (ppb)
MEASURED, Glendora
MEASURED, Upland
MEASURED, Pomona
MEASURED, Fontana
Ramboll Environ Prediction
84 PPB by 2024
1980
1990
2000
2010
2020
2030
2040


Measured vs Modeled Ozone: Anaheim
Measured vs Modeled Ozone: Los Angeles N. Main
Measured vs Modeled Ozone: Santa Clarita
Ozone DV (ppb)
MEASURED, Anaheim
MEASURED, Los Angeles
MEASURED, Santa Clarita
Ramboll Environ Prediction
84 PPB by 2024
1980
1990
2000
2010
2020
2030
2040

-2-

EXHIBIT C

STATEMENT OF WORK

As requested by EMA, Ramboll Environ (RE) is pleased to provide a scope of work for additional modeling and analyses to determine how well the South Coast Air Basin (SoCAB) AQMP modeling tracks observed historic ozone trends as well as to determine ozone trends in recent and future years. The objectives of the new work are to:

- Extend the preliminary EMA dynamic evaluation study that was previously conducted using the 2012 AQMP modeling database with dynamic evaluation using the latest 2016 AQMP modeling database (expected to be available in June 2016)
- Conduct emissions reconciliation analysis of the South Coast emissions inventories
- Investigate weaknesses in EMFAC emission predictions
- Conduct uncertainty analysis on emissions and boundary conditions
- Apply EPA techniques to reduce forecasting errors
- Prepare presentation and conference paper and present the results at the 15th annual Community Modeling Analysis System (CMAS) conference in October 2016
- Publish the results of the study in a peer-reviewed journal.

The tasks that will be performed to accomplish these objectives are described below.

Task 1: Dynamic Evaluation

In the preliminary EMA study with the 2012 AQMP modeling database (2008 base year), RE conducted dynamic evaluation of the modeling system by calculating design values for historical years (1990, 2000, 2005) and a current year (2014), using 2008 as the base year. The trends in modeled and observed ozone design values were compared and the comparison showed that the modeled ozone concentrations were generally significantly less responsive (i.e., stiffer) to emissions changes over the years than observed in the measurements. However, the 2012 AQMP database is now dated and SCAQMD is expected to release the modeling database for the 2016 AQMP (2012 base year) in June 2016. The objective of this task is to determine if the "stiffness" noted previously with the 2012 AQMP has been corrected in the latest AQMP or if modeled ozone reductions still tend to be smaller than the measured reductions.

The following activities will be conducted in this task:

- Develop gridded model-ready emissions for the summer ozone season (June through August) and historical years 1995, 2000, 2005, and 2008 and a recent year (2014 or 2015). As in the preliminary EMA study, RE will use the model-ready emissions for base year 2012 from the 2016 AQMP and the most current estimates of total basin-wide emissions for the historical and recent years to develop the model-ready emissions for these years
- Conduct CMAQ simulations for the summer season of 1995, 2000, 2005, 2008, 2012 (base year), and 2014/2015 using the exact same version of CMAQ used in the 2016 AQMP. The meteorology for all years will be for the base year (2012) following the same approach that is used in projecting future year design values.

- Compare modeled changes in summer season ozone design values from 1995 to 2014/2015 with observed changes for key monitoring locations:
  - Trends in ozone design values
  - Bar graphs and tables showing ppb/decade reductions

Task 2: Emissions Reconciliation Analysis and Review of Satellite Measurements

This task will primarily be performed by STI under subcontract to Ramboll Environ. STI's scope of work for their activities under this task (including a presentation at the 2016 CMAS conference and a peer-reviewed journal article) is provided as an attachment to this SOW. RE will provide the necessary modeling data (CMAQ predictions, gridded emissions) to STI for their analysis. In addition, RE will conduct a detailed literature review of recent studies using satellite measurements to infer NOx emission trends in the South Coast and compare the trends from these studies with those from the South Coast emission inventories. A quick review of some satellite measurement papers indicates that the inventories may be underestimating the reductions in SoCAB NOx emissions over time.

Task 3: Investigate EMFAC limitations

On May 15, 2015, the California Air Resources Board (CARB) released an updated version (v1.0.7) of the EMFAC2014 model to the public. Subsequently, on December 14, 2015, EPA approved the use of EMFAC2014 for State Implementation Plan (SIP) and conformity purposes. The EMFAC model estimates emissions from all types of light- and heavy-duty on-road vehicles in California based on emission rates by vehicle technology and assumptions about vehicle population and vehicle activity (e.g. vehicle miles travelled or VMT, number of starts, idle hours).

According to the EMFAC2014 web database, heavy-heavy duty diesel trucks (HHDT; 33001 to 60,000 pounds gross vehicle weight rating; hereafter referred to as HD diesel vehicles) comprise 32% of NOx emissions from on-road vehicles in the SoCAB. In EMFAC2014, emission rates and speed correction factors for heavy duty diesel trucks meeting 2007 and 2010 emission standards are based on emission testing conducted by CARB and SCAQMD of only six 2010 and later HD diesel vehicles (EMA Memorandum from Tim French, 2014). These data are only partially representative of the technology or typical suite of HD diesel vehicles in-use. Furthermore, the EMFAC estimates of HD diesel vehicle tampering, malfunction and malmaintenance (TM&M) rates, which increase emissions from HD diesel vehicles over the life of the vehicle, are based on dated (1988 and 1998) data (EMA, 2014). These estimates do not reflect the advances in technology (after-treatment systems, fully integrated OBD systems) and other measures (multiple "inducements" to ensure emission compliance) that have been implemented in recent model year HD diesel vehicles (EMA, 2014).

In this task, Ramboll Environ will conduct a detailed review of the basis of Model Year (MY) 2007+ HD diesel vehicle emission rates, speed correction factors and TM&M rates included in EMFAC2014. We will compare EMFAC2014 assumptions for each of these parameters with EPA MOVES model assumptions for MY 2007+ HD diesel vehicles. We will also conduct a literature search to identify any new studies or data sets available and provide a general assessment on whether any new data could be used to estimate MY 2007+ HD diesel vehicle emission rates. The results of the above analysis would be documented in a technical memorandum which would discuss uncertainty in EMFAC2014 MY 2007+ HD diesel vehicle emission rates along with alternative emission rates available in the MOVES model and list

other identified data sources. If data sets are found during the literature review that could improve EMFAC2014 estimates of HD diesel vehicle emission rates, Ramboll Environ could make detailed evaluations of these data under an additional task.

Task 4: Quantify uncertainties in model projections

The objective of this task is to help identify the factors contributing to the lower response of the model to emission changes over the years than observed at many SoCAB monitoring locations. Errors in modeled future year projections can be attributed to uncertainties in a number of factors including emissions, meteorological inputs, boundary conditions, and uncertainties in model formulation, including chemistry mechanisms. In this task, RE will investigate the role of three of these uncertainties in the CMAQ simulations: meteorology, emissions and boundary conditions.

For understanding the extent to which year-to-year meteorological differences influence modeled future year design values, RE will conduct CMAQ sensitivity studies for the 2012 base year and 2023 future year using 2008 meteorology. This approach leverages the model-ready meteorological files for 2008 that are already available from the 2012 AQMP and that were used in the preliminary CMAQ modeling for EMA. The future year design values calculated using 2008 meteorology will be compared with those using 2012 meteorology.

For quantifying the emissions uncertainty, RE will conduct CMAQ sensitivity studies for the summer seasons of the 2016 AQMP base year (2012) and a historical year, to be determined in consultation with EMA, by separately reducing VOC and NOx emissions from on-road mobile sources by a factor of two. Since the modeling inputs do not include pre-merged emissions (i.e., separate emissions for each source category), the fraction of emissions from on-road mobile sources in the SoCAB will be used to determine the amount of reductions in the modeling inputs.

For quantifying the boundary conditions uncertainty, RE will reduce ozone boundary conditions by 10 ppb in CMAQ sensitivity studies for the summer seasons of 2012 and a historical year. These changes to the boundary conditions will enhance the responsiveness of the model to emission changes between the historical year and 2012 within the modeling domain and will likely bring the predicted ozone reductions in closer agreement with measured reductions.

The results of the sensitivity study design value projections for the historical year using the emissions and BC sensitivity tests will be compared with those using the base 2016 AQMP modeling database from Task 1 and with the observed ozone trends to see which changes results in a better match of modeled and actual observed ozone trends between 2008 and the selected historical year.

Task 5: Apply EPA methods to reduce ozone forecast errors

Scientists at EPA's National Exposure Research Laboratory (NERL) have investigated methods to correct biases and errors in ozone projections from photochemical grid models, such as CMAQ (Hogrefe et al., 2014; Porter et al., 2015). In this task, RE will use the methods described in Porter et al. (2015) to reduce the ozone forecast errors from the CMAQ modeling conducted for EMA, We will apply the methods ("Mean and Variance with Temporal Matching" and "Cumulative Distribution Function Matching") that were identified by Porter et al. (2015) as being the most promising of the various methods that were used in their analysis. The validity of these techniques will be tested by applying the techniques to the summer season of one historical year. We will then conduct a summer season simulation for 2023 using the 2016 AQMP database, and apply the technique to adjust 2023 projections.

Task 6: Conference presentation

In this task, RE will present the results of the study at the 15th Annual Community Modeling Analysis System (CMAS) conference in October 2016. CMAS was established under funding from the U.S. EPA to support community-based air quality modeling. The CMAS Center (located at the University of North Carolina, Chapel Hill) is responsible for releasing CMAQ and other models and providing training and support to model users. The CMAS conference is held annually in Chapel Hill, and is well-attended by the photochemical modeling community.

RE will prepare a draft abstract for review by EMA and submit the final abstract to CMAS by the due date (June 29, 2016). We will request an oral presentation for the "Regulatory Modeling and SIP Applications" session of the conference. Prior to the conference in October, RE will prepare a draft presentation and extended abstract for review by EMA and for discussion during a conference call between RE staff and EMA. RE will revise these documents based on the review and discussion and submit the materials to CMAS for the conference presentation and proceedings.

Task 7: Conduct literature review and prepare manuscript for peer-reviewed publication

In this task, RE will conduct a detailed literature review and analysis of previous dynamic evaluations conducted with CMAQ and other models to put the results of the EMA study in context with previous studies. RE will prepare a manuscript, suitable for publication in a peer-reviewed journal, which will summarize the salient features of the literature review and present the EMA study results.

Task 8: Project management, reporting and coordination with stakeholders

In this task, RE will coordinate project activities with project sponsors, agencies, and subcontractors (currently Sonoma Technology, Inc.). RE will attend meetings and interact and collaborate with scientists at SCAQMD, ARB, and EPA. RE staff will attend conference calls, prepare project reports and presentations for these activities. RE staff will assist EMA in the preparation of comments to the draft 2016 AQMP.

Sonoma Technology, Inc.
Environmental Science and Innovative Solutions

June 3, 2016 STI-916025

Prakash Karamchandani
Ramboll Environ
773 San Marin Drive, Suite 2115
Novato, CA 94998

Re: Statement of work and budget for South Coast emissions reconciliation analyses

Dear Prakash,

STI is pleased to submit the attached statement of work (SOW) and budget estimate for performing emissions reconciliation analyses for the South Coast Air Basin (SoCAB). Our SOW describes the following activities:

- Acquiring and processing available ambient monitoring data for 1991-2015 from Photochemical Assessment Monitoring Stations (PAMS) and other sites in the SoCAB
- Working with Ramboll Environ to acquire emissions inventory data used in retrospective and future year photochemical modeling simulations for the SoCAB and processing these data to support emissions reconciliation analyses
- Compare ambient- and emissions-derived trends in VOC and NO_x levels and VOC/NO_x ratios
- Use PAMS data to evaluate trends in MIR-weighted reactivity at various sites

We look forward to working with you on this project, and please contact me with questions at 707.665.9900 or sreid@sonomatech.com.

Sincerely,

Stephen Reid
Environmental Modeling Division Manager

Approved:

Hilary Hafner
Senior Vice President

Attachments

Statement of Work

Emissions inventories are an important component of air quality planning and a key input to photochemical grid models that support air quality assessments. Several methods are available to evaluate and improve emissions estimates, including comparisons between emissions inventories and ambient monitoring data. These comparisons, which are often called "emissions reconciliation," are used to identify omissions or inaccuracies in an emissions inventory, leading to further investigation and inventory improvement. The basic approaches used to perform emissions reconciliation analyses include selective, quantitative comparisons of emissions inventory- and ambient-derived molar pollutant ratios (e.g., VOC/NO_x or CO/NO_x), as well as comparisons of emissions inventory- and ambient-derived hydrocarbon compositions. Typically, these comparisons are made for morning commute periods when emission rates are high and mixing depths are low, minimizing the impact of confounding factors such as transported and chemically changed pollutants (Chinkin et al., 2005).

In addition, the sensitivity of ozone formation to changes in VOC or NO_x concentrations has been linked to several indicator species, including total reactive nitrogen (NO_y) and formaldehyde (HCHO). For example, VOC-sensitive conditions may exist when afternoon NO_y concentrations exceed 20 parts per billion (ppb) and HCHO/NO_y ratios are less than 0.28 (Sillman, 1995).

To support assessments of trends in ozone and ozone precursor concentrations in the South Coast Air Basin (SoCAB), STI will evaluate trends in ambient VOC and NO_x concentrations and VOC/NO_x ratios for selected monitoring sites and perform reconciliation analyses with air quality model-ready emissions data. STI will also analyze trends in VOC reactivity by applying Maximum Incremental Reactivity (MIR) values to individual hydrocarbons species measured at SOCAB monitoring sites. In addition, STI will review available data for key indicator species.

Gridded, hourly emissions data will be acquired from Ramboll Environ for the years 2000, 2005, 2008, 2012, and a current year (2014 or 2015). We understand that the 2012 data will be obtained from the South Coast Air Quality Management District's (SCAQMD) CMAQ database developed for the 2016 Air Quality Management Plan (AQMP). Emissions data for 2000, 2005, 2008, and 2014/2015 will be generated by Ramboll Environ by applying scaling factors to the 2012 CMAQ-ready emissions data. These scaling factors will be developed from historical SoCAB emission summaries from the California Air Resources Board (ARB).

Task 1: Ambient Data Analyses

For the time period of interest (1991-2015), STI has reviewed available ambient monitoring data for the SoCAB from EPA's Air Quality System (AQS), including data from Photochemical Assessment Monitoring Stations (PAMS), State and Local Air Monitoring Stations (SLAMS), and other special purpose monitoring sites. A summary of available total nonmethane organic compounds (TNMOC), NO_x, and indicator species data is show in Table 1.

This summary of available data indicates that the Asuza, Burbank, Pico Rivera, and Upland sites are likely to have sufficient data to support trend analyses for VOC, NO_x and VOC/NO_x ratios. Limited

analyses can also be performed at additional sites (e.g., VOC/NO_x ratios can be calculated for 2005 and 2008 at the LAX-Hastings site). The availability of indicator species data is extremely limited.

Table 1. Summary of data availability by monitoring site.

Site Name	Site Type	TNMOC Availability*	NOx Availability	Indicator Species Availability
Azusa	PAMS	1995 - 2014 (missing data after 2011)	1991 - 2015	
Burbank	Other	1998 - 2012 (missing data in 1997 and 2012)	1991 – 2014	Formaldehyde (HCHO): 1997-2012
Los Angeles North	Unofficial PAMS	1995 - 2001 (only sample at 5 PST and 12 PST); 2009 - 2014	1991 – 2015	NO_y: 2011 – 2015 HCHO: 2009 – 2012
Pico Rivera	PAMS	1997 - 2004	1991 – 2005	HCHO: 1997-2001
Pico Rivera New	SLAMS	2006 - 2014	2006 - 2015 (missing data in 2006 and 2012)	HCHO: 2006-2012
Hawthorne	Other	1997 - 2003	1991 - 2004	
LAX – Hastings	SLAMS	2004 - 2013	2004 - 2015	
Newhall	Other	1999 & 2000	1994 - 1995; 1999 - 2001 (missing July in 1999)	HCHO: 1999-2000
Santa Clarita	Other	2001 - 2014 (missing July data in 2014)	2001 - 2015	HCHO: 2001-2012
Banning-South Hathaway	PAMS	1997 - 2008	1997 - 2015	HCHO: 1996-2008
Rubidoux	Unofficial PAMS	2009 - 2013	1994 - 2015	NO_y: 2011 – 2015
Upland	PAMS	1994 - 2008 (missing 1996)	1994 - 2015	

*Data monitored for summer only (typically beginning in June or July and continuing through September.

For the monitoring sites and time period (1991-2015) of interest, we will acquire available data from AQS for speciated hydrocarbons, total nonmethane organic compounds (TNMOC), NO_x, and indicator species, as well as wind speed and wind direction. To ensure quality data for analysis, Level 1 validation of the VOC data will be performed, as outlined in Brown and Hafner (2006). The goal of data validation is to identify a representative data set for each site. Therefore, outliers, unrealistically low concentration values, and shifts in species patterns will be flagged as suspect and may not be included in the analysis. In addition, for PAMS sites, the sum of PAMS target compounds

(PAMSHC) will be compared to corresponding TNMOC values, and TNMOC data will be excluded where PAMSHC is greater than TNMOC or less than 70% of TNMOC.

Our analyses will focus on ozone season data (May-October) collected during early morning hours (e.g., 0600-0900) to minimize the influence of transported pollutants and chemical reactions on ambient measurements. After the appropriate ambient data have been selected and prepared, trends in hourly TNMOC and NO_x concentrations at each site will be evaluated by calculating the mean ozone season value for each year. In addition, TNMOC/NO_x ratios will be calculated based on molar ratios with TNMOC in units of ppbC, and NO_x in units of ppb. TNMOC/NO_x ratios will be calculated by day of week (weekdays vs. weekend days) and wind quadrant, as the sources impacting a given monitoring site vary by wind direction. In addition, we will evaluate trends in VOC reactivity by applying Maximum Incremental Reactivity (MIR) values to individual hydrocarbons species measured at PAMS sites.

Task 2: Emissions Inventory Analyses

For each monitoring site, STI will define grid analysis zones based on predominant wind speeds during early morning hours (e.g., 0600–0900), using average wind speeds to identify which grid cells to include in the ratio analyses based on approximate air parcel travel distance during the time period selected of interest. These grid analysis zones will then be used to identify grid cells in the CMAQ modeling domain for which emissions data will be analyzed.

STI will work with Ramboll Environ to acquire gridded, speciated, hourly emissions data for all grid cells of interest. These data will include all years for which CMAQ modeling was performed so that trends in total VOC and NO_x emissions and emissions-derived VOC/NO_x ratios can be assessed. VOC emissions will be provided by the lumped and explicit chemical species associated with the SAPRC-07 chemical mechanism that was used for CMAQ simulations. For ratio calculations, VOC emissions data will be converted to moles carbon to facilitate comparisons with ambient data, which is reported in units of parts per billion carbon (ppbC).[1] In addition, VOC/NO_x ratios will be calculated by wind quadrant and day of week to support comparisons with ambient-derived ratios.

As described above, emissions inventory work will focus on the 2000, 2005, 2008, 2012 and 2014/2015 emissions data derived from the 2016 AQMP modeling.

Synthesis of Findings

STI will prepare tabular and graphical summaries of our comparisons of trends in ambient- and emissions-derived VOC and NO_x concentrations and VOC/NO_x ratios. These data will be discussed in a brief technical memorandum and summarized in PowerPoint slides. STI will also assist in presenting results to SCAQMD and ARB, as needed.

[1] Note that we will be unable to match individual hydrocarbon species in the emissions inventory with individual PAM species, which limits the comparability of these data sets (e.g., we cannot compare the MIR-weighted reactivity of the ambient data and the emissions data).

Responses to Comment Letter from Truck and Engine Manufacturers Association (EMA)
(Comment Letter #58)

Response to Comment 58-1:

Staff appreciates the participation in the AQMP public process and your comments. The 2016 AQMP employed a state-of-the-science numerical modeling system, WRF-CMAQ, and followed U.S. EPA guidance to demonstrate attainment and estimate emission reductions needed to meet the standards. The comment letter states that AQMP's over-predicts ozone and over-estimates the NOx emission reductions required to meet the standard. However, that statement is based on non-standard methodologies, such as a simplified extrapolation, which have not been approved by U.S. EPA or used by the scientific community for predicting air quality. SCAQMD hosted a Science Technology Modeling Peer Review committee (STMPR) meeting on October 26, 2016 to discuss the revised attainment scenarios and the approaches that Ramboll-Environ/EMA suggest. The presentations and minutes describing the discussions among the committee members and public are available at http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=STMPR(Mod)_102616.

Appendix V was released in September 2016 and available for public review for more than 45 days.

Comments on CARB's SIP strategy and EMFAC were forwarded CARB who will be holding its public hearing on the SIP strategy and/or EMFAC.

Response to Comment 58-2:

U.S. EPA lists different types of model performance evaluations to ensure the accuracy of model prediction. The AQMP attainment demonstration includes various types of evaluations including operational evaluation, diagnostic and a form of dynamic evaluation using sensitivity tests. Another dynamic evaluation approach, also recognized by U.S EPA, is using various conditions, e.g., by day of the week, by season, and regionally. The AQMP modeling includes a five-month period starting from May to September, which includes various meteorological conditions, emission variability, and seasonal changes. The modeling results exhibit a robust model performance across these different chemical environments, thus supporting the assertion that the modeling results respond appropriately to changes in emissions. Therefore the AQMP approach satisfies an alternative form of dynamic evaluation that EPA recommends.

The comments on the under-estimation of future design values are not valid since the linear interpolation method referred in the commenter's analysis is overly simplified approach that overlooks the complexity of ozone chemistry, therefore is not supported by U.S. EPA nor scientific community. One should use great caution in drawing a straight line to project ozone trends, since the ozone progress slope will vary depending on the length and the timing of the period that the trend is retrieved from. For example, if ozone ambient data measured in 2016 is included in the trend analysis, the 2012 AQMP projected ozone progress agrees well with the measured progress. In addition, staff were unable to reproduce the numbers provided in the comment letter. EPA recommends to use 5-year weighted average design values, but the ozone concentrations in the table do not agree with EPA recommended 5-year design value.

Response to Comment 58-3:

The attainment demonstrations in the 2016 AQMP as well as in the 2012 AQMP were conducted using the most recent U.S. EPA guidance released at the time. The attainment demonstration in the 2016 AQMP was based on the U.S. EPA guidance released in 2014, whereas the demonstration in the 2012 AQMP was based the guidance released in 2007. The new RRF methodology delineated in the 2014 guidance leads to future design values that are more responsive to emission reductions, compared to the previous RRF approach from the 2007 guidance. This is why the ozone carrying capacity estimated in the 2016 AQMP is higher than the one estimated in the 2012 AQMP.

As responded above, ozone trend cannot be interpolated linearly and model performance cannot be evaluated based on such linear interpolated value. One should use great caution in drawing a straight line to project ozone trends, since the ozone progress slope will vary depending on the length and the timing of the period that the trend is retrieved from. For example, if ozone ambient data measured in 2016 is included in the trend analysis, the AQMP projected ozone progress agrees well with the measured progress.

The measurements data used in the bar graphs on p.5 need validation. The U.S. EPA guidance recommends using a 5-year weighted design value to demonstrate attainment. The measured data given in the bar graphs do not match with the 4th highest of a given year, 3-year design value nor 5-year weighted design value.

Response to Comment 58-4:

Ozone chemistry is complex and the response of ozone to changes in precursor emissions is not linear. This is particularly evident in the case of the NOx reduction disbenefit, which is the increase in ozone concentration despite the reduction in NOx emissions. High levels of NOx in metropolitan urban areas, such as Los Angeles, provide atmospheric conditions under which an initial reduction in NOX emissions increases ozone concentrations. Under these conditions, NOx emissions need to reach a substantially lower level to result in a net ozone reduction, and hence, overcome the NOx disbenefit. Therefore, a simple extrapolation using a straight line would not provide an accurate estimation of future ozone concentration. This type of simple linear extrapolation has not been approved by U.S. EPA or used by the research community.

The 2012 AQMP relied on the 2012 Regional Transportation Plan (RTP) to forecast future growth. The 2012 RTP incorporated the impact of the economic recession that occurred during the 2008-2010 period to a certain degree. It is not expected that the growth forecast reflected the full intensity of the recession. For example, the consumption of taxable gasoline consumption reached its minimum level in 2012, which is after the RTP was finalized in April 2012. Therefore, some discrepancy is expected in the projected emissions inventory and actual data.

Neither SCAQMD nor US EPA support the linear extrapolation of ozone to future years. The rates of ozone progress in the figure in page 8 are mere speculations with no supporting analysis.

Response to Comment 58-5:

The carrying capacity for 2023 to attain the 80 ppb ozone standard is approximately 150 tons per day (TPD) of NOx. The attainment scenario that incorporates proposed control measures is revised. The total NOx emissions remaining in the attainment scenario is 141 TPD. This yields the Basin maximum concentration to 84.5 ppb, which due to EPA rounding conventions is in attainment of the standard.

170 TPD of NOx will lead to approximately 87 ppb, which is above the standard.

Response to Comment 58-6:

There are uncertainties in both baseline and future-year emission inventories. The attainment demonstration using RRF and periodic updates of AQMPs are explicit acknowledgement of that fact. However, qualification of the uncertainties is difficult, if not impossible, simply because the amount of information that goes into preparation of an emissions inventory. As described in Chapter 3 and Appendix V, we strive to use the most up to date information in our emission inventories.

As shown in Appendix V, the modeling performance in characterizing primary and secondary pollutant concentrations in the basin is satisfactory. In our past work, such as MATES studies, emissions trend and concentration modeling are consistent with ambient concentrations. Therefore, we have reasonable confidence in our baseline inventories in representing basic air pollution characteristics in the area.

It's true that there are additional uncertainties in projecting future-year emissions, primarily from difficulties in forecasting future economic conditions and the pace of technology development. The future-year growth forecast is from SCAG. SCAG provided a retrospective analysis of its performance in socioeconomic forecast over the past 30 years at the May STMPR meeting. While there are uncertainties, the long-term trend of SCAG's forecast is deemed to be robust.

When comparing the projected 2023 baseline NOx emissions from 2007, 2012 and 2016 AQMPs, it's true they changed significantly and they became progressively smaller. These changes are not a reflection in uncertainties in the emissions inventories, as implied by the commenter. The smaller 2023 baseline emissions is primarily due to the adoption of proposed measures including CAA 182(e)(5) measures in the past AQMPs.

Spatial and temporal distributions and speciation of emissions are important parts of modeling emission inventories. The District corroborated extensively with CARB on the distributions of emissions. Distribution profiles and gridding surrogates are updated periodically. There are some discussions of the distributions of emissions in Appendix V. If the commenter is interested in more detail or how a specific emission source is distributed, the staff will make the specific information available.

CARB has a continuous program in maintaining and updating emission speciation profiles. Detailed information can be found in https://www.arb.ca.gov/ei/speciate/speciate.htm. This comments were forwarded to CARB who will be holding its public hearing on EMFAC and state SIP strategy.

Response to Comment 58-7:

The 2012 RTP finalized in April 2012 did not capture the full impact of the recent economic recession, as evident from the data showing that the consumption of taxable gasoline reached its minimum level in 2012. Taxable diesel consumption shows a similar trend as well. Such discrepancies in the emissions inventory contributed to the uncertainties in the 2012 AQMP prediction.

Response to Comment 58-8:

The graph was revised accordingly.

The 2016 AQMP modeling approach satisfies the requirements and recommendations given in the 2014 U.S. EPA guidance, including an alternative form of dynamic evaluation.

Comment Letter from the Valley Industry and Commerce Association (Comment Letter #59)

August 19, 2016

Michael Krause, Planning & Rules Manager, AQMP
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Subject: 2016 Draft Air Quality Management Plan – Comments

Dear Mr. Krause,

The Valley Industry and Commerce Association (VICA) represents over 400 businesses and non-profits across California. We welcome the opportunity to comment on the draft 2016 Air Quality Management Plan (AQMP). VICA supports the AQMP's focus on incentive-based models and the emphasis on working with business and affected industries.

Overly prescriptive regulatory mandates have a negative eff ect on our local region, by undermining the economy. We have made great progress reducing emissions from stationary sources in the South Coast Basin over the last few years. However, there have been high costs to manufacturers and other industrial businesses. These costs have contributed to some businesses leaving the area or reducing operations. This means fewer jobs, slower economic growth and the loss of real opportunities for Los Angeles residents. 59-1

We support continuing the emissions reductions progress through incentive-based frameworks, cost effectiveness and options for businesses. Some of the new emission control technologies are not currently cost-effective, but may be necessary to achieve standards by 2023. We support appropriate incentives to offset the capital and operational costs of implementing these technologies. The mobile source plan should be fuel-neutral and allow consumer choice. 59-2 59-3

VICA urges further detail on the funding of the $2 billion incentives outlined in the AQMP. This funding is critical to the AQMP achieving its targets and we urge the South Coast Air Quality Management District to partner with stakeholders to finance this incentive program. 59-4

VICA looks forward to continuing its work with the AQMP Advisory Group, and appreciates the thoughtful effort put into developing this plan.

Sincerely,

Kevin Tamaki
Chair

Stuart Waldman
President

Valley Industry & Commerce Association • 16600 Sherman Way, Suite 170 Van Nuys, CA 91406 • phone: 818.817.0545 • fax: 818.907.7934 • www.vica.com

Responses to Comment Letter from Valley Industry and Commerce Association (VICA) (Comment Letter #59)

Response to Comment 59-1:

Staff appreciates the support for incentives and acknowledges the concerns with regulations that burden businesses impacting jobs and economic growth.

Response to Comment 59-2:

Staff recognizes that some new emission control technologies are not currently cost effective so incentives can assist in advancing deployment of the cleaner technologies needed to meet the fast approaching deadline of 2023 for the 1997 ozone standard. The Plan has been updated to prioritize maximizing emission reductions utilizing zero-emission technologies, when cost-effective and feasible, and near-zero emission technologies in all other applications.

Response to Comment 59-3:

Staff appreciates the comment regarding the long-standing policy of fuel neutrality and supports such a balance where possible. However, staff believes that appropriate funding should be commensurate with the levels of emission reductions needed. As such, the SCAQMD has petitioned U.S. EPA to adopt ultra-low NOx engine emissions standards so that all fuel types have the opportunity to meet one performance standard.

Response to Comment 59-4:

Please see Response to Comment 26-3 regarding the Financial Incentive Funding Action Plan.

Comment Letter from PTS Staffing (Comment Letter #60)

From: Ronald Stein [mailto:rstein@PTSstaffing.com]
Sent: Sunday, August 21, 2016 6:41 AM
To: Angela Kim <akim@aqmd.gov>
Subject: 2016 AQMP Comment Form

Angela Kim, not sure if my comments were submitted via the online form 2016 AQMP Comment Form https://onbase-pub.aqmd.gov/sAppNet/UnityForm.aspx?key=UFSessionIDKey

If my comments did not come through, here are my comments to the AQMD:

California is in a precarious position. While the East coast experiences abnormally wet conditions, the stagnant weather conditions in California are causing more smog days. The emissions crusade that began in 2006 has failed to reduce California's 1 per cent contribution to the world's greenhouse gases, all while cap-and-trade has raised $7 billion in fees for the government's pet projects.

AB32 was signed into law in 2006 at a time when CA was contributing 1% to the world's greenhouse gases, now, a decade later, according to the California Energy Commission California still contributes a miniscule 1 per cent. The cap & trade program that has hit the citizens' pocketbooks for more than $7 Billion dollars to fund a multitude of governmental pet projects, has had little to no impact on the reduction of California's contributions to global greenhouse gas emissions.

The environmental crusaders are also unaware that wind and solar are only able to provide intermittent electricity to the grid, but cannot accomplish the work now performed by oil, natural gas, and coal that are the basis of every component of modern civilizations' industries and infrastructures. 60-1

Maybe it's karma that the cash cow of the cap & trade "fees" may be dying, as CARB avoids the transparency that the program has done little in 10 years to reduce California's 1% contribution to the World's Green House gases.

Yet, the state, by avoiding transparency of the results of the California emissions crusade remains on ago-it-alone crusade to micro manage the California emissions that generates billions of dollars for the government at the expense of businesses and the financially challenged. With numerous state government agencies there is a feeding frenzy on getting a piece of the lucrative cap and trade "fee" revenue.

In 2015, Britain's energy and climate change secretary Amber Rudd set priority to ensure energy bills for hard working families and businesses to be kept as low as possible, announced sweeping CUTS to renewable energy subsidies.

In Australia, after almost a decade of heated political debate, became the world's first developed nation to repeal carbon laws that put a price on greenhouse-gas emissions. In 2015, Australian voters turned against

1

climate laws, blaming them for lost jobs, rising energy bills, higher production costs, and living costs. J.P. Morgan, estimated the removal of the carbon tax would boost its valuation on several companies as much as 6%.

60-1 Con't

The public, especially the homeless and poor that are disproportionally bearing the cost burden for the emissions crusade efforts of the AQMD deserves to know if there is any progress over the last decade in reducing California's 1% contribution to the world's greenhouse gases.

Ronald Stein, P.E.
rstein@PTSstaffing.com

949-268-4023
Irvine, CA

Responses to Comment Letter from PTS Staffing (Ronald Stein)
(Comment Letter #60)

Response to Comment 60-1:

In 2013, the California cap was set to reduce emission levels by 2 percent below 2012, then decline 2 percent in 2014 and 3 percent annually from 2015 to 2020 (https://www.arb.ca.gov/cc/capandtrade/capandtrade.htm).

The AB 32 goal to reduce greenhouse gas emission to 1990 levels by 2020 requires a portfolio of activities such as the current cap and trade program and the mandatory reporting regulation, to name a few. Progress has been demonstrated in both of these programs. Since the implementation of the Mandatory Reporting Regulation beginning in 2009 and the Cap-and-Trade program in 2012, emissions have dropped from 481.4 million metric tons of carbon dioxide equivalent (MMT CO2e) in 2008 to 441.5 MMT CO2e in 2014.

As stated in Chapter 10, the renewable generation technologies currently must still be supplemented by fossil fuel generation due to intermittency and periods of over-generation, along with lack of manageable loads and energy storage (MacDonald, 2016) (Trancik, 2015). The reliance on fossil generation to support renewables is expected to decline as more grid resources such as storage and demand response are more fully integrated onto the grid.

Comment Letter from National Fuel Cell Research Center (Comment Letter #61)

2016 Air Quality Management Plan
Comments of the National Fuel Cell Research Center
August 19, 2016

Submitted by:
Dr. Scott Samuelsen
Director, National Fuel Cell Research Center
Co-Chair, California Stationary Fuel Cell Collaborative
Professor of Mechanical, Aerospace, and Environmental Engineering
University of California Irvine
Irvine, California 92697-3550
gss@nfcrc.uci.edu
949-824-5468

I. Introduction

The National Fuel Cell Research Center (NFCRC) at the University of California, Irvine (UCI) facilitates and accelerates the development and deployment of fuel cell systems, promotes strategic alliances to address the market challenges associated with the installation and integration of fuel cell systems and renewable energy systems, and educates and develops resources for fuel cell and self-generation stakeholders around the world. The NFCRC is working with GE-Fuel Cells, LLC; LG Fuel Cell Systems Inc.; Bloom Energy; Doosan Fuel Cell America; and FuelCell Energy. All commend the excellent Air Quality Management Plan (AQMP) that the South Coast Air Quality Management District (SCAQMD) has drafted.

II. Comments on Draft AQMP

A. Fuel Cell as a Replacement for Stationary Combustion Sources

61-1

The NFCRC strongly supports the inclusion of fuel cells as Stationary Source Control Measures (CM) CMB-01, CMB-02 and CMB-03 for NOx emission reduction from traditional stationary combustion sources, from commercial and residential space and water heating, and from non-refinery flares, respectively.

In Appendix IV-A, SCAQMD's Stationary and Transportation Source Control Measures, the Background on Zero and Near-Zero Emission Technologies includes information on the success to date of fuel cells in California as a fuel flexible (biogas, hydrogen, natural gas) replacement for combustion technology, as well as providing backup power and hydrogen generation. Stationary fuel cells are installed as primary power generation in California at hospitals, critical telecommunication hubs, grocery stores, hotels, prisons, water resource

recovery facilities, food processing plants, universities, office buildings, and server farms. Some applications are all-electric, whereas other applications recover the heat for space heating, cooling, or steam. The use of heat for the production of chilled water is increasing in popularity as an alternative to electric driven vapor compression refrigeration. An example is the generation of 200 tons of chilling at the UCI Medical Center from a 1.4 MW stationary fuel cell that is mentioned in the draft AQMP. In addition to virtually zero emission of criteria pollutants, fuel cell systems consume net-zero water in the production of energy.

Grid simulations, conducted by the UCI Advanced Power and Energy Program (APEP), demonstrate the significant reduction in NO_x that both biogas and natural gas fuel cells would achieve in a low carbon grid with the co-benefit of reducing greenhouse gases (GHG) and other criteria air pollutants.[1] In Figure 1, for example, the substantial emissions reductions for both NO_x and CO_2 are demonstrated when load management from natural gas combined cycle plants is replaced with fuel cells.

61-1 Con't

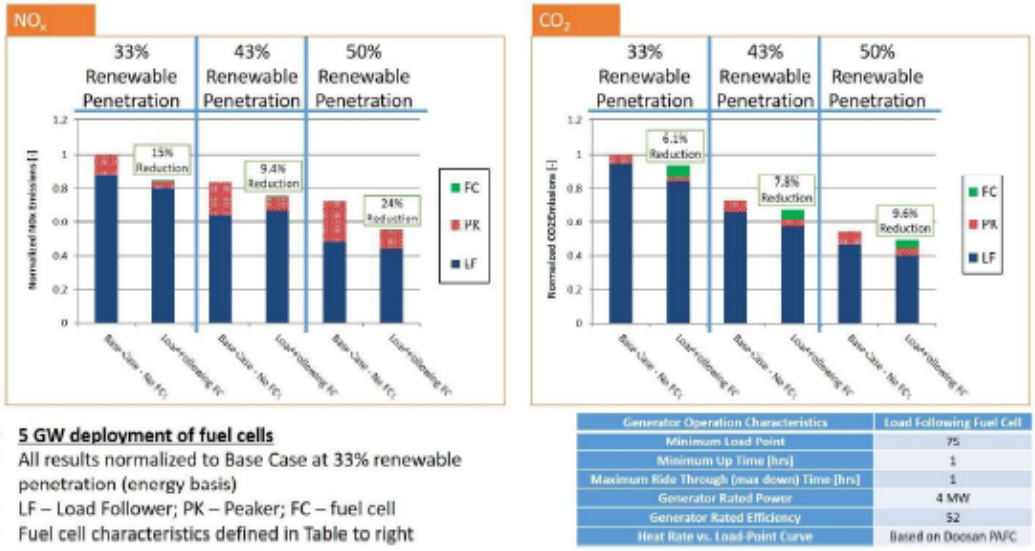
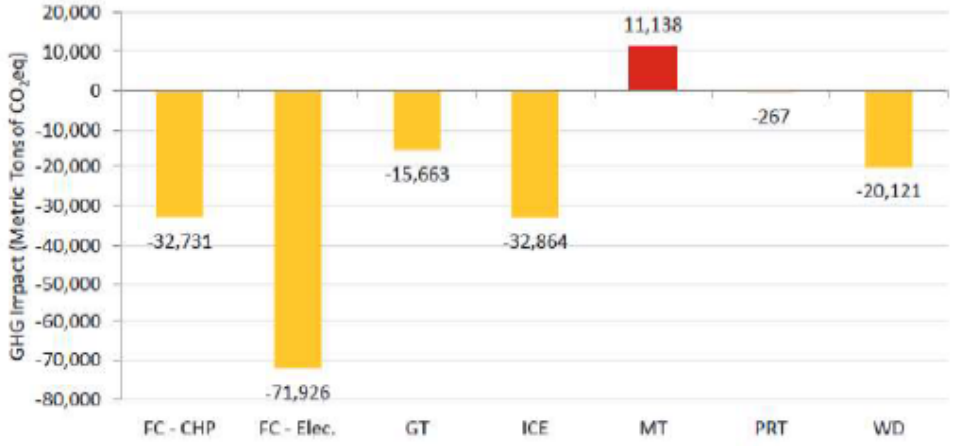


Figure 1: Grid Simulation Modeling of 5 GW Fuel Cell Deployment in California with Different Renewable Penetrations[2]

[1] *"Stationary Fuel Cell Benefits in a Low-Carbon California Grid,"* Advanced Power and Energy Program, University of California, Irvine. April 30, 2013.

[2] Shaffer, B., Tarroja, B., & Samuelsen, S. (2015). Dispatch of fuel cells as Transmission Integrated Grid Energy Resources to support renewables and reduce emissions. *Applied Energy*, *148*, 178–186.

As acknowledged in the AQMP, experiential data support these projections, namely that stationary fuel cells reduce GHG emissions in addition to NO_x emissions. As an example, a 2013 California Public Utilities Commission (CPUC) report delineates this attribute (Figure 2) based on data from fuel cell and other systems installed through the Self Generation Incentive Program (SGIP).



* FC – CHP = CHP Fuel Cell, FC – Elec = Electric-Only Fuel Cell, GT = Gas Turbine, ICE = Internal Combustion Engine, MT = Microturbine, PRT = Pressure Reduction Turbine, WD = Wind Turbine

Figure 2. GHG Reductions of Fuel Cell Systems by Technology Type[3]

61-1 Con't

B. Fuel Cells and Energy Storage are Complementary Technologies in a Future Grid

Chapter 10 of the AQMP, "Climate and Energy," details how California is establishing a renewable grid, while relying heavily on firm clean power generation to meet GHG and criteria air pollutant emissions targets. Energy storage is also recognized in CM #CMB-01 as a provider of grid ancillary services. Although intermittent wind and solar renewables and energy storage provide many benefits, because they are not firm capacity, they are not a firm clean power generation solution to replace central station power plants. Therefore, supporting high efficiency, low GHG, and virtually zero criteria pollutant emission options such as fuel cells remains critical. In addition to the multiple applications of fuel cells listed as onsite generation for industrial, commercial and residential buildings in the AQMP, fuel cells also function as utility scale generation. On the utility side of the meter, large-scale fuel cell systems ("TIGER

61-2

[3] *2013 SGIP Impact Evaluation*, prepared by Itron. April 2015, page 7-2.

Stations")[4] are being deployed to create grid support solutions where transmission is constrained or increased reliability is sought. Examples range from a 15MW system in Connecticut, to a 30MW system in Delaware, to a 59MW system in Seoul, Korea. These resources are providing firm, clean load-following power generation to complement the increasing deployment of intermittent solar and wind renewable resources and support grid reliability in locations where it is most needed.

61-2 Con't

In research on smart grids, microgrids, and advanced energy communities, APEP analyses have consistently shown the significant requirement of both battery electric storage (BES) and dispatchable firm clean power generation, such as fuel cell systems, to support and enable increased solar and wind generation.

B.1. Utility Grid Network Modeling

A detailed consideration of utility grid network dynamics, and their evolution over time, is required to understand the power generation and energy storage needs of a grid as it evolves toward 100% renewable operation. The California electricity system dispatch tool (HiGRID)[5] was utilized over a portfolio of scenarios to evaluate various forms of storage (e.g., batteries, pumped hydro, compressed air, and flow batteries) and power generation (e.g., gas turbines, fuel cells) to manage a high-penetration of renewable solar and wind resources and achieve, overall, a stable and resilient 100% renewable grid. Results include the following:

61-3

- The fundamental characteristics of hydrogen energy storage and fuel cells, which allow independent sizing of power (MW) and energy (MWh) capacities, make both essential grid support technologies for a 100% renewable grid,
- The use of natural gas fuel cells (with current performance) can today reduce greenhouse gas emissions more than energy storage for cases of 33% and 50% renewable energy (see Figure 3),
- The ratepayer costs for use of natural gas fuel cells to achieve these higher GHG reductions are lower than the costs of corresponding energy storage technologies to achieve lesser GHG reductions (see Figure 4),

[4] TIGER: Transmission Integrated Grid Energy Resource.
[5] J. D. Eichman, F. Mueller, B. Tarroja, L. S. Schell, and S. Samuelsen, "Exploration of the integration of renewable resources into California's electric system using the Holistic Grid Resource Integration and Deployment (HiGRID) tool," Energy, vol. 50, pp. 353–363, 2013.

- If biogas resources can be sufficiently increased, they can best be used in fuel cells to produce additional GHG reductions with ultra-low criteria pollutant emissions,
- Fuel cells today can operate with dynamic load-following characteristics and are evolving to have very significant ramping capabilities which will enable even higher renewable solar and wind deployment,
- The natural gas system can evolve to store massive amounts of renewable fuel, preferably hydrogen made from otherwise curtailed renewable power, which future fuel cell systems can use to produce zero GHG and zero criteria pollutant emission power,
- In addition to fuel cells, battery technologies are also essential to grid support in the 100% renewable case with their characteristics of relatively fixed power and energy capacities (for shorter term and smaller sized energy storage), and
- Inverters used by both battery and fuel cell systems can be used to enhance grid reliability and other attributes by providing ancillary services in the future.

61-3 Con't

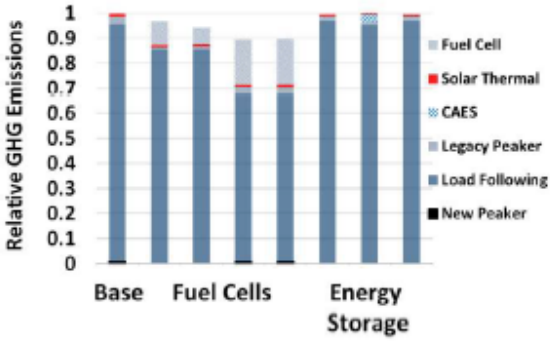


Figure 3. 33% Renewables: CO_2eq Emissions[6]

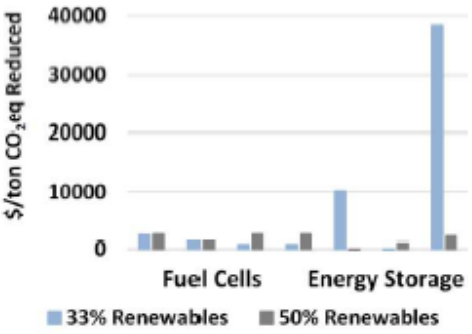


Figure 4. CO_2 Reduction Cost per Ton Reduced[6]

B.2. Distinguishing Characteristics

There is an important need to distinguish the technical capabilities and features that are offered by BES from those that are offered by firm (e.g., 24/7) clean power generation. A brief summary of these grid support characteristics is provided in Table 1. Note that firm clean power generation produced by fuel cell systems has the advantages of providing firm capacity additions

61-4

[6] Forrest, K., Shaffer, B., Tarroja, B., Samuelsen, S., "A Comparison of Fuel Cell and Energy Storage Technologies' Potential to Reduce CO_2 Emissions and Meet Renewable Generation Goals", *ECS Transactions*, 2016. 71(1), 193-203

to the grid, generating power at efficiencies between 43% - 65%, providing spatially separate charging and discharging, and separate power and energy capacity sizing. BES systems have the advantages of faster dynamic ramp rate, 100% of capacity dynamic ramping range, and higher round-trip efficiency. These distinguishing characteristics make BES preferred in some grid support applications and firm clean power generators preferred in others. For example, both BES and clean power generators can operate dynamically. Applications that require very fast ramp rates (e.g., frequency control) will prefer BES, whereas grid locations that need capacity additions will prefer firm, clean power generators. BES systems are not generators, so they must be installed in tandem with power generators and understood to consume some of the power generated whenever they are used. If round-trip efficiency is the most important characteristic desired in a grid support application, then BES systems are preferred. However, if it is desired to store a massive amount of energy, then the separate power and energy sizing characteristic of firm, clean power generators - coupled with electrolyzers and hydrogen storage - are preferred and are more cost effective. Finally, by using the existing natural gas pipeline infrastructure, which has no requirement for infrastructure investment (e.g., new transmission wires) to move the energy throughout the region, firm clean power generators are preferred, especially if the location of charging (e.g., desert solar farm) is separated from the desired location of discharging (e.g., major coastal city).

61-4 Con't

Because of these distinguishing characteristics and the preferred applications that result, it is critical to realize that both BES and firm clean power generators are important technologies for a sustainable and reliable utility grid network. Both of these emerging technologies require and deserve policy support for meeting California climate and air quality goals.

Table 1. Some Distinguishing Technical Characteristics of BES and Clean Power Generation for Grid support

Characteristic	*Clean Power Generation*	*Battery Energy Storage**
Firm Capacity	Yes	No (SOC+ dependent)
Dynamic Ramp Rate	Fast (type dependent)	Faster
Range of Dynamic Operation	20% - 100% of capacity (type dependent)	100% of capacity
Power Generation Efficiency	43% - 65%	NA
Round-trip Storage Efficiency	40% - 60%	70% - 85%
Spatially Separate Charging/Dis-charging	Yes	No
Separate Power & Energy Capacity Sizing	Yes	No

* BES here refers to the most common type of rechargeable battery systems deployed in the SGIP program (i.e., lithium ion) and does not include flow batteries

+ SOC: State of Charge

61-4 Con't

B.3. Importance of Rate Structures

There is also an important need to identify the manner in which firm clean power generation and BES are being dispatched on the utility grid network. For the most part, firm, clean power generation is today dispatched as a base-load resource due to the financial incentives that promote the 24 hours a day, 7 days a week (24/7) continuous operation of the equipment to garner the best rate of return on investment. However, if rate structures were developed to provide a financial incentive for firm, clean power generators to operate dynamically, producing more power during some times of the day and less during others, then the inherent capabilities of firm clean power generators to operate dynamically would be exercised by those participating in the SGIP program.

61-5

Similarly, BES systems are currently dispatched by participants in the SGIP program in a manner to garner the best rate of return on investment. In the case of BES, since these systems store energy rather than produce power, there are certain times of the day in which they consume

electric power and other times of the day in which they discharge electric power. Currently, this means that BES systems are typically charged at night when time-of-use (TOU) electric rates are low and discharged during the day when TOU rates are high.

Figure 5 presents a typical TOU daily rate structure for both the summer period (typically the months of June, July, August, and September) and winter period (typically October – May). Note that typically the differences between on-peak and off-peak prices in the winter are less than those in the summer, which may lead to circumstances under which energy arbitrage (i.e., charging BES systems when prices are low and discharging them when prices are high) may not be financially viable at all. That is, operations, maintenance, and degradation may cost more than the value of the energy price difference times the round-trip energy efficiency. Typically summer TOU prices have 3 levels: off-peak, mid-peak, and on-peak as shown in Figure 5. Also typical is the larger difference in price between off-peak and mid-peak and on-peak prices that make BES use for energy arbitrage more financially attractive. Note, that in all cases whenever a BES system is dispatched, it would be charging between the hours of 11:00pm and 8:00am and discharging between 8:00am and 11:00pm.

61-5 Con't

Figure 6 presents the hourly average breakdown of renewable power generation for a winter day (December 1, 2015) in California. Note that renewable power generation ranges from 1,600 MW to about 2,500 MW (averaging about 1,700 MW) between the hours of 11:00 pm and 8:00 am when BES systems are most likely to charge. Conversely, between the hours of 8:00 am and 5:00 pm the renewable power ranges from 2,500 MW to a peak of 7,100 MW with an average of approximately 6,100 MW. This is a period in which BES systems are likely to discharge and as a result tend to shift less renewable power from night to day and also exacerbate the potential for renewable power over-generation and curtailment.

Figure 7 presents the hourly average breakdown of renewable power generation for a summer day (June 3, 2016) in California. Note that renewable power generation ranges from 3,000 MW to about 4,100 MW (averaging about 3,600 MW) between the hours of 11:00 pm and 8:00 am when BES systems are most likely to charge. On the other hand, between the hours of 8:00 am and 7:00 pm the renewable power ranges from 4,000 MW to a peak of 9,200 MW with an average of approximately 8,300 MW. This period of high renewable power generation is the same period in which BES systems are likely to discharge. As a result, the typical dispatch of

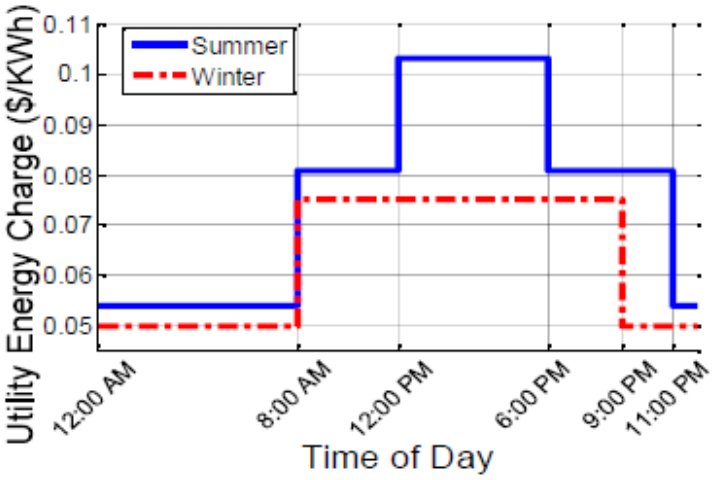


Figure 5. Typical time-of-use (TOU) rate structures for California IOU service territory.

61-5
Con't

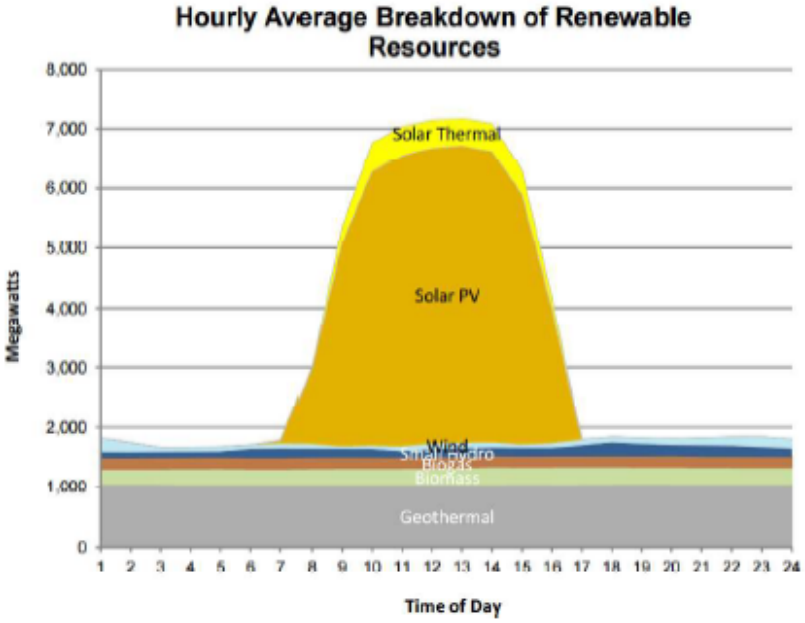


Figure 6. Average renewable power production in California on December 1, 2015.[7]

[7] CAISO, available on-line at: http://content.caiso.com/green/renewrpt/20151201_DailyRenewablesWatch.pdf

BES systems under current rate structures tends to shift less renewable power from the night to compete with more renewable power during the day and also tends to exacerbate the potential for renewable power over-generation and curtailment.

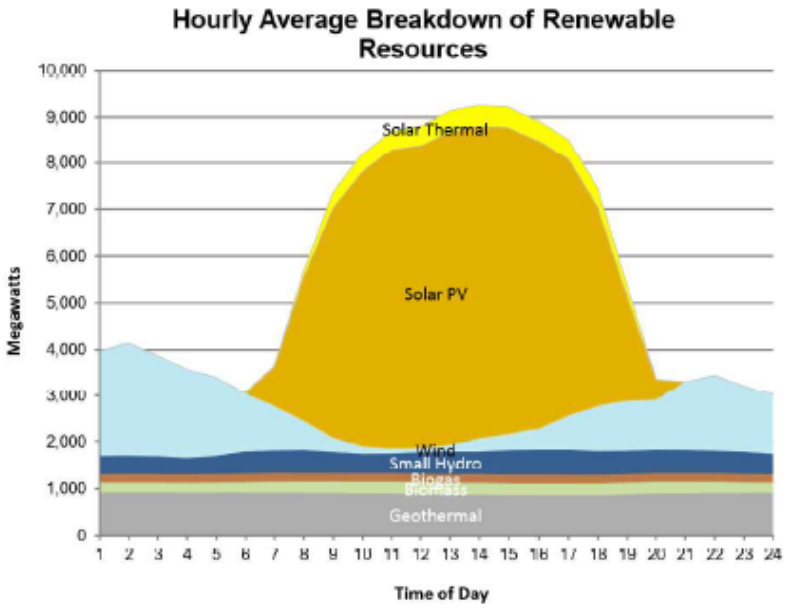


Figure 7. Average renewable power production in California on June 3, 2016.[8]

61-5 Con't

This unfortunate set of current conditions has led to the situation that BES systems are today performing a negative function on the grid, leading to increased grid dynamics and actually increasing the GHG emissions of the grid. The fact that BES systems produced a net increase of GHG emissions is confirmed by the latest information available from analysis of BES performance in the SGIP program.[9] Even though a very limited number of BES systems were evaluated in this study, TOU rate structures have not changed and, as a result, one should expect that BES systems in the SGIP program will continue to be dispatched in ways that are economically attractive while increasing GHG emissions.

Finally, an important need for work on rate structures is in order to (1) enable economic

[8] CAISO, available on-line at: http://content.caiso.com/green/renewrpt/20160603_DailyRenewablesWatch.pdf
[9] Itron, 2013 SGIP Impact Evaluation, April, 2015.

operation of both BES and firm clean power generators in a manner that best supports the introduction of more intermittent renewables, and (2) support grid reliability and sustainability. BES rate structures are required to incentivize charging during periods of high (excess) renewable power generation and discharging during periods of low renewable power generation and high demand (e.g., winter evening peak demand period). Firm, clean power generation rate structures are required to incentivize turn-down of power generation when renewable power generation is high (excess) and ramp-up of power generation when renewable power is low and demand is high. In addition, for both BES and firm, clean power generation, rate structures must be developed and implemented that value the ramping capabilities of both technologies and provide utilities with the tools to pay SGIP technologies for providing valuable ancillary services (e.g., Volt-VAR support, frequency regulation).

61-5 Con't

III. Conclusion

The AQMP appropriately proposes the inclusion of fuel cell systems that are available today to replace combustion generation. The ability of fuel cell systems to produce electricity, heating, cooling and generate hydrogen is unique. In addition to the direct replacement of traditional combustion sources in CM CMB-01 and CMB-02, CMB-03, fuel cell systems are also well-suited as a part of a renewable grid that can exclusively manage the dynamics of an intermittent renewable grid through attributes such as load-following and ramping ability (from 0-100%) in combination with firm, local capacity.

Responses to Comment Letter from National Fuel Cell Research Center (NFCRC)
(Comment Letter #61)

Response to Comment 61-1:

Staff appreciates the support and notes the information provided.

Chapter 10 in the Revised Draft Plan has been updated to expand the discussion on fuel cells and power-to-gas activity.

Response to Comment 61-2:

Staff notes the information provided. Chapter 10 in the Revised Draft Plan has been updated to expand the discussion on fuel cells and power-to-gas activity.

Response to Comment 61-3:

Staff notes the information provided. Chapter 10 in the Revised Draft Plan has been updated to expand the discussion on fuel cells and power-to-gas activity.

Response to Comment 61-4:

Staff notes the information provided. Please see Response to Comment 61-3 regarding fuel cells and power-to-gas activity.

Response to Comment 61-5:

Staff notes the information provided. Please see Response to Comment 61-3 regarding fuel cells and power-to-gas activity.

Comment Letter from the REALTORS Committee on Air Quality (Comment Letter #62)

REALTORS® *Committee on Air Quality*

Carol Banner, Chairman

106 South Grand Avenue
Pasadena, CA 91105
323/342-9373

August 19, 2016

Dr. Philip Fine
Deputy Executive Officer
South Coast Air Quality Management District
21865 East Copley Drive
Diamond Bar, CA

SUBJECT: Comments on the Draft 2016 Air Quality Management Plan

Dear Dr. Fine:

The REALTORS Committee on Air Quality (RCAQ) is a voluntary coalition of 35 Associations of REALTORS that serve the South Coast Air Basin. We strongly support clean air in concert with housing affordability and availability, a competitive economy, and overall quality of life.

The Draft 2016 AQMP is a bold move beyond previous AQMPs that relied on undefined "black box" measures to meet federal standards. The following comments identify our support for realistic and effective features of the Draft AQMP, along with several caveats about the Plan's impact on housing: 62-1

- **Take Full Advantage of Co-Benefits.** The AQMP should take credit for existing and future energy efficiency and conservation programs, greenhouse gas reductions and other existing programs by state, regional and local agencies that provide emission reduction co-benefits, without duplicating efforts. This integrated approach will save money in the long-run.

- **Employ Incentives.** RCAQ supports the proposed use of incentives, rather than sole reliance on command and control regulations, to accelerate penetration of clean technologies in residential properties. The AQMP estimates that $1 billion is needed for the next fifteen years to fund a wide range of incentives for all sectors of the economy. RCAQ urges the District to supplement the AQMP with a detailed action plan to establish the reasonable availability of needed incentive funds. 62-2

- **Avoid Negative Impacts on Housing Affordability, Availability.** A group of proposed control measures would impact new and existing housing in the air basin. This 62-3

1

includes measures aimed at energy conservation beyond SB 350 requirements, cleaner space and water heating, and more stringent wood-burning fireplace controls, and additional requirements for new development and redevelopment above and beyond Title 24, among others.

We want to focus the District's attention to the current and projected critical housing deficit within the basin. The unmet demand for workforce housing is particularly acute. Mandated retrofits or new features imposed when a property is transferred will push housing costs up and erode affordability; the increased cost typically gets mortgaged for 20 to 30 years, compounding the impact on affordable housing. Cost increases to for-sale housing will also cause a ripple effect on the cost of the rest of the housing stock, including rentals. In order to better understand this dynamic, we request that the District provide information on the cumulative socio-economic impacts of the suite of proposed measures that impact the housing sector as part of the forthcoming Socio-Economic Analysis. 62-3 Con't

We urge the District to insure that the AQMP does not exacerbate the region's shortage of shelter – especially affordable shelter. Control measures that impact housing must be conceived of as "win-win" measures that benefit housing and air quality concurrently. For this reason, we support the proposed incentive-based approach for ECC-03 as the most powerful way to motivate property owners and residents to incorporate cleaner, more energy efficient features and technologies in existing homes, without triggering unintended economic and health impacts associated with increasing housing costs at point of sale. Incentive programs will provide an efficient way to track and monitor the penetration of new technologies in housing.

- **Provide Ample Review Time for Draft AQMP, PEIR, and Socio-Economic Analysis.** As of this date, neither the Program EIR nor the Socio-Economic Analysis are available to review in concert with the Draft AQMP. We urge the District to insure the opportunity for a comprehensive review of all parts of the AQMP, supported by a series of public workshops in September and October. The comments conveyed in this letter are based only on the Draft Plan and appendices available as of August 19th. 62-4

- **Push for Federal Support and Cooperation.** No matter how ambitious the District is in regulating pollutants under its authority, our air basin will not meet federal clean air standards without full federal cooperation to reduce emissions under its control. One area where this is especially apparent is the need to clean the heavy-duty truck fleet serving the South Coast basin, a significant portion of which originates outside California. RCAQ supports District efforts to secure a national clean-truck regulation that will not only clean the South Coast Basin's fleet, but reduce pollution and diesel particulates in communities all across the nation. A nationwide standard would level the playing field, allowing the South Coast Air Basin to remain competitive in the goods movement arena, which encompasses a third of California's economy. 62-5

We look forward to discussing these comments with District staff so that they can be addressed in the Final Draft 2016 AQMP to be released in September. In addition to our overarching messages, **Attachment A** presents detailed recommendations on seven proposed control

measures that would affect housing affordability and availability. Please contact Carla Walecka, RCAQ representative on the AQMP Advisory Group, at 323-342-9373 or cwalecka@earthlink.net with any questions you may have about these comments.

Sincerely,

Carol Banner

Carol Banner, Chair
REALTORS Committee on Air Quality

3

Attachment A

REALTORS Committee on Air Quality (RCAQ)
Comments On Proposed AQMP Control Measures

ECC-02, Weatherization above and beyond SB 350 requirements

RCAQ supports the integration of clean new technologies into homes, We agree that the District should harness the emission reduction benefits of existing and planned state, federal and local energy efficiency programs and incentives.

ECC-03, Enhancement in Building Energy Efficiency and Smart Grid Technology Beyond SB 350

As noted in our cover letter, the air basin has a critical housing shortage and soaring housing costs. The District should proceed beyond the statewide level playing field set by SB 350 only if it can insure cost-effective results that do not harm housing affordability and availability, or discourage needed expansion and replacement of our housing stock. Therefore, we support the District's proposed incentives to encourage homeowners to upgrade their homes with cost/effective weatherization and energy efficiency features. This measure should allow home owners and residents to install the most cost-effective and appropriate technologies and appliances for their specific conditions and uses; one-size-fits all approaches must be avoided.

Further, the proposed control measure description should consider a variety of different types of incentives aimed at homeowners, utilities, and vendors for maximum cost/effectiveness. RCAQ looks forward to working with the District and other stakeholders to help identify the kinds of incentives and outreach necessary to motivate property owners to install the latest energy efficiency features in their homes, in a manner that does not place undue pressure on housing affordability and availability.

This measure needs to be linked with proposed FLX- 01, Education and Public Outreach, to inform property owners, residents and local jurisdictions of the availability of new technologies and models for space and water heating, low emission appliances, and energy cost savings and air quality benefits of retrofits and replacements.

As this measure is refined, we urge the District to more precisely describe the scope of surplus savings anticipated, as well as the amount of incentive funding required to achieve those surplus emissions savings We are not able to comment specifically on the reasonableness of these two aspects at this time.

ECC-04, Cool Roof Technology and Emission Reductions

RCAQ supports District efforts to refine cool roof requirements to insure no adverse emission impact. In the event that retrofits are needed for any existing residential reflective roofs installed under the current requirements, we urge the District to provide financial incentives to those property owners.

CMB-02, Commercial and Multi-Family Residential Space and Water Heating

This measure would tighten the District's current boiler regulation, but a sense of scale is lacking in the control measure description: how many multi-family retrofits are assumed to yield a 30% NOx emission reduction by 2023, and 60% by 2031? How much acceleration of normal change-out patterns is needed? What is the expected average cost per multi-family unit? We also recommend that the timetable for implementation be tied to the commercial availability of new, cost-effective compliant boiler models. We strongly support implementing multi-family boiler change-outs through incentive programs aimed at cost/effective retrofits in order to avoid harming rental housing affordability.

CMB-04, Restaurant and Residential Cooking

This proposed measure includes residential cooking in addition to restaurant appliances. However, the control measure description does not discuss what the goal is for the residential sector. Until this is more fully developed through discussions with stakeholders, we recommend that the AQMP measure focus only on commercial applications. We recommend that any future efforts to change residential cooking appliances focus on incentives and education to motivate residents to change-out their old appliances for cleaner burning ones.

BCM-09, Tighter Wood Burning Fireplace Restrictions

This measure should be implemented only as a back-up measure if needed to attain the federal PM 2.5 standard. In the control measure description, we urge the District to maintain the ability for residents to use grandfathered wood fireplaces on as many days as possible during the winter season while not hindering attainment. We further urge the District to continue its effective incentive program for voluntary gas-log fireplace change-outs. RCAQ has supported this approach since wood burning restrictions were first added to the AQMP. Cost/effective incentives should be tailored to benefit those portions of the basin that exceed the federal PM 2.5 standard.

EGM-01, Emission Reductions from New Construction and Redevelopment

While we understand that state regulations require SCAQMD to consider a rule similar to the San Joaquin Valley's Rule 9510 development fee because it is "reasonably feasible", we do not support applying the same approach for the South Coast Air Basin. By adding costs to new construction, this rule would not only impact the cost of new homes but would have a ripple effect on the affordability of all housing in the basin. We note that new housing contributes to emission reductions by meeting current codes regarding Green materials, energy use, congestion mitigation, trip reduction ordinances, CEQA air quality mitigations, etc.

As drafted, this measure does not include emission reduction estimates or cost estimates due to uncertainty about how the measure would be structured, and does not specify the degree to which it overlaps with existing RTP/SCS strategies, Title 24, and other existing requirements that reduce emissions. For example, new construction consistent with SCAG's RTP/SCS contributes to mobile source emission reductions at the regional level that are already captured in the AQMP baseline. It is important not to double-count or duplicate emission reductions already being implemented. Until such time as this measure can be described and quantified, with a sound legal basis, it should remain in the portion of the AQMP that is not part of the enforceable commitment.

Conducting a thorough investigation through a multidisciplinary advisory group must be a prerequisite to moving forward on any kind of EGM-01 rule impacting housing. We note that the previous Proposed Rule 2301 Working Group has not met for years and would need to be reconstituted. The Realtor community would like to be involved in any EGM-01 advisory group.

Inconsistent Cost/Effectiveness Rankings

Tables 6-4 through 6-7 contain cost/effectiveness rankings for measures in Appendix IV-A. The tables assign cost effectiveness rankings even to measures that are not quantified. For example, EGM-01 is assigned a cost effectiveness ranking of 5 in the absence of either cost or emission reduction estimates. Is the "5" ranking for EGM-01 equivalent to the "5" ranking for other partially quantified and unquantified measures in this chart? A footnote acknowledges that emission reductions and costs will be determined after projects are implemented, which appears to contradict the "5" ranking.

Further, the least cost effective measures in Table 6-6 are assigned a value of "5," while the least cost effective measures in companion Table 6-5 are assigned values of 12, 13 and 14. Is a "5" for EGM-01 equivalent to a "14" for Improved Breakdown Procedures?

We recommend that all cost-effectiveness rankings be revisited after the Socio-Economic Analysis is complete. The ranking system needs to be clearer, and the ranking values need to be comparable across mobile and stationary sources measures.

Responses to Comment Letter from REALTORS Committee on Air Quality (RCAQ)
(Comment Letter #62)

Response to Comment 62-1:

Staff appreciates the participation in the development of the 2016 AQMP and agrees with taking advantage of the co-benefits achieved with the implementation of existing programs regulating GHGs or improving energy efficiency. As such, the Plan includes measures such as ECC-01 and ECC-02 that seek criteria pollutant reduction credit from such programs.

Response to Comment 62-2:

Staff appreciates the support for incentives and refers the commenter to Response to Comment 26-3 regarding the development of the Financial Incentive Funding Action Plan.

Response to Comment 62-3:

Staff understands the concern with housing and refers the commenter to Response to Comment 38-3 regarding the measure focused on new development and re-development projects. Support for control measure ECC-03 is appreciated. It should be noted that ECC-03 would provide voluntary incentives to encourage energy efficiency. For more information on socio-economic impacts please refer to the 2016 AQMP Socioeconomic Analysis (http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/socioeconomic-analysis).

Response to Comment 62-4:

The release of the Draft AQMP in June 2016 was designed to allow the public to become familiar with the proposed strategy and provide comments to be included in a Revised Draft Plan. Release dates have been staggered for the Draft Program Environmental Impact Report (PEIR) and Socioeconomic Assessment in order for the supporting documents to analyze the latest version of the Plan. As such, the costs and benefits analysis was released August 31, 2016 and the PEIR was released mid-September in time for review of the Revised Draft Plan that was released early October. Similarly, Appendix V and VI did lag behind the release of the Draft Plan but were available by September and provided over 30 days to review and comment. All those comment periods overlapped to allow for a comprehensive, concurrent review by the public.

In addition, staff is providing a 60-day public review and comment period for the PEIR and while each of the draft Socioeconomic chapters have been given a 30-day public review and comment period, a complete updated Socioeconomic Assessment with appendices was released in November for another 30-day public review and comment period. Comments on the Revised Draft Plan were encouraged to be provided 30-days after its release so staff could incorporate changes into the Draft Final Plan released in December.

Response to Comment 62-5:

Staff agrees that the Plan requires support on the federal level to provide a level playing field across the nation with a national clean truck regulation. Please see Responses to Comments 30-5 and 54-2 regarding "fair share" reductions from the federal, state and local levels.

Response to Comment 62-6:

Staff appreciates the support from the commenter.

Response to Comment 62-7:

Staff appreciates the participation in the development of ECC-03 and looks forward to future participation in the upcoming workgroup. Energy usage within the residential sector shows a correlation with household income. ECC-03 will assist removing some of the financial barriers by provided incentive funds to help lower the upfront capital equipment cost and also lower operation and maintenance costs as compared to an older existing appliance or application. The incentives proposed in ECC-03 would be used to improve housing and make it more affordable to incorporate energy efficiency. The availability of homes would not be affected.

Staff agrees that public outreach and education are essential to making the incentive program successful and fully intend to incorporate this into the program. Along with the upcoming working group with stakeholders staff intends to seek a collaboration with solar contractors, who review residences for solar panel additions, to promote program and encourage solar panel purchasers to incorporate additional zero and near-zero appliances (as mentioned in ECC-03) to into the home which would be coupled with the solar energy being generated.

Response to Comment 62-8:

Staff appreciates the support from the commenter. Staff will determine whether or not it is cost effective to install retrofits before proceeding to change requirements. A public working group will be formed if incentives are considered.

Response to Comment 62-9:

The control measure does not propose to amend existing boiler requirements to make them more stringent. The technology proposed in the AQMP is available now. The proposed programs provide incentives for commercial and multifamily property owners to convert to currently available ultra-low NOx units with emissions significantly lower than rule requirements in the short term and cost effective zero and near zero emission alternatives for the long term. Incentives would help property owners purchase new more efficient and lower NOx units near the end of the useful life of their existing units. An estimate of the incremental cost of purchasing lower emission units and the incentive per unit are identified in the AQMP and the socioeconomic assessment for the AQMP. Many businesses or buildings would have one unit. However, for businesses and buildings with multiple units, the cost can be estimated based on the number of units the owner chooses to replace. Staff's estimates of emission reductions, cost per unit, and the population of units is provided in the AQMP and the socioeconomic assessment for the AQMP.

Response to Comment 62-10:

The control measure does focus on commercial cooking appliances. All the proposed reductions are from incentives for commercial cooking appliances. However, in the long term, cost effective energy efficient or low NOx residential appliances could also be incentivized or included in a manufacturer based regulation.

Response to Comment 62-11:

Rule 445 is currently structured to curtail use of wood-burning devices through forecasting so called "no-burn" days, which otherwise allows for the use of grandfathered wood fireplaces on as many days as possible during the winter season. In addition, control measure BCM-09 seeks to expand the use of incentives associated with voluntary gas-log fireplace change-outs through the use of higher incentives or expansion of the eligible geographic area, focusing on expanding the effectiveness of the program. Additional analysis called for by this control measure will determine whether additional curtailment for 24-hour PM2.5 concentration reduction purposes are appropriate and necessary to assist in attainment of the annual average federal PM2.5 NAAQS.

Response to Comment 62-12:

Please see Response to Comment 64-12 regarding San Joaquin Valley's Rule 9510 and Response to Comment 57-4 regarding emission reduction estimates.

Response to Comment 62-13:

The cost-effectiveness ranking is determined based on the best available information at the time of SIP submission. In Table 6-4, although cost effectiveness has not been quantified for BCM-08 and BCM-09, they are assigned a ranking of "4" relative to other TBD measures that are ranked at "5", based on the estimated minimal cost of implementation.

The ranking in each table is relative to other measures in the same table. For example, the cost-effectiveness of the measure that is assigned a ranking of "4" in Table 6-4 is not equivalent to the 4th most cost-effective measure in Table 6-5. Inter-comparison across mobile and stationary measures could be done by relating the cost effectiveness in dollars/ton.

The Preliminary Draft Socioeconomic Report was released on August 31, 2016 with a comment period of 60 days. The Draft Socioeconomic Report was released on November 19, 2016, with an additional public review and comment period of 30 days that ended on December 19, 2016. Both released versions covered the estimates of costs, cost-effectiveness, and benefits of the plan and were released earlier to maximize the review time for the public and stakeholders.

Comment Letter from Richard Luczyski (Comment Letter #63)

DRAFT 2016 AIR QUALITY MANAGEMENT PLAN

2016 AQMP Comment Form

Please enter your contact information, comments and/or upload comment files below. The information collected may be used to provide further information about public workshops and hearings, and other events related to the 2016 AQMP. Responses to comment will be compiled and included in the final Plan package.

*Fields Required to Submit a Comment

Commentor Contact Information

Commentor's Name* Richard Luczyski

Organization* No Affiliation

Address 942 N. Chester Ave

Email Address* rluczyski@gmail.com

If not representing a specific organization, please enter "No Affiliation".

City Pasadena

State CA

Zip Code 91104

Phone Nbr (626)798-2030

Comments (Unlimted Size)

AQMP, You can have all the measurements of Air Quality posted in some web site, but until people can see those numbers each day, with the health risks they are subjecting themselves too each day, they will never make the connection of the accumulation effects they are doing to their health. You need to do a much better job with educating the public through as many venues as possible. Even though each of the pollutants found in the Air Quality information is given a value there is still some harm to the health of everyone who breathes the air where they live, work and play.I suggest you install more real time Air Monitors along all Freeways because the air will have different values in each location. So let people see and hear from whatever sources that will explain the harm that is caused each day just breathing the air in their communities. Maybe when people understand the harm caused they will move faster to solve those problems. At present we are just taken out of the decision process and letting Business and Government continue to kick the problem down the road, thinking in another ten or 15 years it will disappear. Let's move faster by showing the people the harm that is being caused by bad air today. In my community of Pasadena,CA.. I don't see any helpful Air monitoring equipment used to inform people of a potential health risk, but I do see signs about traffic problems,Alerts and Sporting and Concert events. So a sign certainly can be used for Health Alerts from Air Quality. Good or Bad.

63-1

Upload Additional Comment and Supporting Files (30 Mb Maximum per file)

AQMP Comments Files

Note: Supported upload files include all versions of Microsoft Office, jpeg, tiff, PDF, mp3, mp4, and text files.

Commentor Signature*

For More Information Contact: Angela Kim (akim@aqmd.gov) (909) 396-2590

Responses to Comment Letter from Richard Luczyski
(Comment Letter #63)

Response to Comment 63-1:

Staff agrees the public outreach and education is critical in establishing an informed public. As such, the 2016 AQMP includes a measure, FLX-01, that is designed to provide education, outreach and incentives for consumers to contribute to clean air efforts. Examples include consumer choices such as the use of energy efficient products, new lighting technology, "super-compliant" coatings, tree planting, transportation choices, and use of lighter colored roofing and paving materials which reduce energy usage by lowering the ambient temperature. With regard to the air quality data, staff does provide current air quality data online of all locations in our jurisdiction (http://www.aqmd.gov/home/library/air-quality-data-studies) in both the form of a map as well as written data. In addition, the forecasted air quality data and the historical air quality data from the past is provided from the same webpage.

With regards to air monitoring, since 1977 the SCAQMD has monitored air quality in the region and currently operates 38 stations (http://www.aqmd.gov/docs/default-source/default-document-library/map-of-monitoring-areas.pdf) to assist in understanding the air quality for various locations. Separately, we do have monitors along the freeways but the location decisions are made in collaboration with U.S. EPA. Near-roadway studies have been conducted (http://www.aqmd.gov/docs/default-source/air-quality/air-quality-monitoring-studies/Near-Road-Monitoring/special-monitoring-studies.pdf?sfvrsn=2) and staff encourages the public to read the published results also available online at http://www.aqmd.gov/docs/default-source/air-quality/air-quality-monitoring-studies/near-roadway-study.pdf?sfvrsn=2.

Comment Letter from Construction Industry Air Quality Coalition (Comment Letter #64)

CIAQC
CONSTRUCTION INDUSTRY AIR QUALITY COALITION

Coalition Members

AGC CALIFORNIA

Associated General Contractors America-San Diego Chapter, Inc.

Building Industry Association of Southern California

California Construction Trucking Association

Engineering Contractors Association

United Contractors

SCCA
Southern California Contractors Association

August 18, 2016

Michael Krause
SCAQMD Headquarters
21865 Copley Drive
Diamond Bar, CA 91765

RE: DRAFT 2016 AIR QUALITY MANAGEMENT PLAN

Dear Mr. Krause:

The Construction Industry Air Quality Coalition (CIAQC) is pleased to submit the following comments on the portions of the AQMP that have been completed and released for public review. CIAQC participated in the development of both the **BizFed** and **Southern California Leadership Council** comment letters as well. While we concur with all the comments in those letter, we want to give added emphasis to those comments and add a few that are specific to our industry.

We are generally pleased with the overall direction of the proposed plan and its emphasis on incentives to achieve the proposed emission reductions. Incentives have been used effectively in other air quality programs to achieve extra emission reductions. In particular in the Carl Moyer program and the SOON program to achieve early emission reductions from off-road construction equipment.

1. **SCAQMD needs to make it a top priority to improve the accuracy of Photochemical Modeling Ozone Emission Reduction Predictions.** It is becoming more and more difficult and expensive to reduce emissions as we approach the level of zero in our quest for clean air. Since modeling is used extensively to predict the "emission" reductions needed it is important to get the numbers right. We are aware of independent analysis which indicate that the two previous plans developed by AQMD under predicted the emission reductions. This was based on real-time monitoring data in which actual readings indicate faster reduction that the model predicted. Achieving the emission reductions is extremely costly and it is important that employers not be required to reduce "phantom emissions" that never really existed in the first place. 64-1

2. **We are concerned about the effort to control growth and the use of indirect source controls.**
It is extremely difficult to construct new development in the South Coast Air Quality Management District. The California Environmental Quality Act (CEQA) and the myriad of agency rules and regulations have generated a housing and employment crises in Southern California. CARB has already adopted the most stringent rules in the nation for on and off-road sources. These measures will achieve significant reduction and have come at great cost to the construction industry in both dollars and jobs. Having SCAQMD add an additional layer of regulation will only punish an industry that is still struggling to recover from the recession of 2007. 64-2

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Main Funding Provided by the Construction Industry Advancement Fund and the Fund for Construction Industry Advancement

CIAQC

CONSTRUCTION INDUSTRY AIR QUALITY COALITION

Coalition Members

AGC CALIFORNIA

Associated General Contractors America-San Diego Chapter, Inc.

Building Industry Association of Southern California

California Construction Trucking Association

Engineering Contractors Association

United Contractors

SCCA

Southern California Contractors Association

3. **The Plan appears to rely heavily on premature death and mortality to justify the extraordinary cost of the proposed emission reductions.** It appears increasingly that the science identifying premature death from PM 2.5 is uncertain at best. Despite the air quality challenges in Southern California, California residents have the lowest mortality rate of all 50 states but Hawaii. Further Southern California has a lower mortality rate than the state as a whole. Even the authors of the studies cited by SCAQMD in their health effects chapter admitted that several years ago that their data did not support a finding of premature death from PM2.5 in California, or the western states for that matter. Regardless of the Federal standards and the resources used by the Federal regulators to set those standards, if the California evidence challenges those decisions, you owe it to our community to report those inconsistencies. 64-3

4. **We are concerned about the vagueness of the Off-Road emission targets and timing in the Draft Plan.** The Zero Emission Off-Road Emission Reduction Assessment; Zero Emission Off-Road Work-site Emission Reduction Assessment and the Zero Emission Diesel Requirement would all seem to directly impact the construction industry. However, these are all designated and "Not Yet Quantified", in both the 2023 and 2031 time-frame. Most of this equipment is very expensive to both acquire and operate. Business plans for equipment replacement are made many years in advance. The industry is already under heavy regulatory pressure to replace virtually all of its on-road, off-road and portable equipment in the time frames considered by the plan. This added uncertainty could have the unintended effect of slowing the turnover of diesel equipment while the long range plans are developed. 64-4

CIAQC appreciates the openness and willingness of the SCAQMD staff to engage our industry in the development of this AQMP. We want to continue to work closely with your staff as the specifics for the plan are developed. Our industry has many knowledgeable and technically skilled individuals. We are willing to share our expertise with your staff to write an Air Quality Management Plan of which we can all be proud.

Thank you.

Sincerely,

Michael Lewis, Senior Vice President
Construction Industry Air Quality Coalition

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Main Funding Provided by the Construction Industry Advancement Fund and the Fund for Construction Industry Advancement

Responses to Comment Letter from Construction Industry Air Quality Coalition (CIAQC) (Comment Letter #64)

Response to Comment 64-1:

Numerical models have a certain level of uncertainty and limitations, but SCAQMD uses U.S. EPA guidance, a state-of-the science modeling platform and the most updated emissions inventory. Also, SCAQMD is willing to collaborate with stakeholders to improve modeling performance and emission estimation. For more specific responses, please see Responses to Comment Letters 52 and 58.

Response to Comment 64-2:

The SCAQMD staff has not concluded that a future regulation similar to San Joaquin Valley APCD Rule 9510 is the appropriate control method for the South Coast Air Basin. However, as stated in EGM-01, the SCAQMD must evaluate San Joaquin's rule as feasible measure to implement in the South Coast Air Basin. In addition, proposed measure EGM-01 is not intended to control growth, but rather identify actions that can mitigate emissions and potentially result in additional emission reductions. These actions can be regulatory or voluntary in nature and will be identified through a public process. SCAQMD staff believes that through the public process, actions can be identified that may either not place undue economic burden to the industry or minimize the economic impact to the industry.

The SCAQMD mobile source measures are proposed to help implement the State Mobile Source Strategy "Further Deployment of Cleaner Technologies" measures. The SCAQMD is identified as an implementing agency along with CARB and U.S. EPA. As such, many of the SCAQMD mobile source measure are seeking to identify actions that potentially result in additional emission reductions that can go towards meeting the "Further Deployment" measures emission reductions.

Response to Comment 64-3:

In the latest Integrated Science Assessment of Particulate Matter (2009), the U.S. EPA determined that the scientific evidence is sufficient to conclude that PM2.5 causes premature mortality. Specifically, given multiple lines of scientific evidence from a broad range of studies, the overwhelming scientific consensus is that PM2.5 does, in fact, cause premature death. The fact that California has a low age-adjusted mortality rate does not preclude the population from experiencing the negative health effects of poor air quality. In fact, the Draft AQMP Appendix I (Health Effects) already discusses several epidemiological studies conducted in California and Southern California that link PM2.5 exposures with increased mortality, especially mortality from cardiovascular causes. The epidemiological studies summarized in the Draft Appendix I include studies that show strong associations between PM2.5 and premature deaths, as well as studies showing weaker or less certain associations, and those that show no effect, such that the readers can be informed of these studies, and can refer to the U.S. EPA Integrated Science Assessments or to the individual research publications for additional detail. While there are a small handful of studies that show no effect, the vast majority of the studies (including several conducted in California) show that PM2.5 is linked to increased mortality risk.

Beyond public health benefits, another justification of the Plan is simply that we legally need to meet the state and federal standards within the specified time frames. The socioeconomic analysis provides information about the potential incremental costs, benefits, and macroeconomic impacts associated with the Plan, and it quantifies these effects where data and methodologies are available. The purpose of the

socioeconomic analysis is therefore to further inform public discussions and the decision-making process associated with the adoption of the Plan, but it is not part of the "justification" of the Plan.

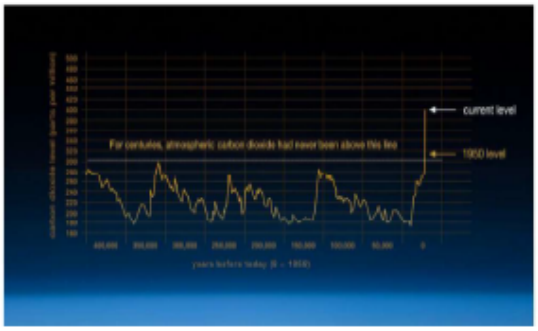
Response to Comment 64-4:

The comments are related to the measures included in the State Mobile Source Strategy. Your comment will be forward to CARB.

Comment Letter from Del Amo Action Committee (Comment Letter #65)

August 19, 2016

Climate change: How do we know?



For if people do these things when the tree is green, what will happen when it is dry?" Luke 23:31

Climate Change Chart from NASA

From Florence Gharibian: Florencegharibian@yahoo.com

Chair of the Del Amo Action Committee, participant in the Los Angeles Environmental Justice Network, Department of Toxic Substances Control (DTSC), Branch Chief, LA Enforcement Program (Retired).

The comments on the AQMP in this correspondence address:

- Placing a priority on facilities that pose an eminent and substantial danger to public health.
- SCAQMD as the primary regulatory agency enforcing air regulations at Stationary Sources.
- The importance of an effective enforcement program in ensuring regulatory compliance.
- Proposal for a program to encourage new clean air technologies.
- The importance of accurate petroleum refinery air monitoring.
- SCAQMD role in achieving more sustainable management of solid waste.

As I write these comments a fire storm burns out of control in San Bernardino County. The severity of the fires is a result of the California drought and unusually hot weather. 2016 is the hottest year on record across the globe. It is my firm belief that Climate Change is the result of the pollution of the earth. The existence of mankind hangs in the balance. 65-1

I submit these comments today because I believe that nothing is more important that protecting our environment, stopping pollution and cleaning up the damage already done.

Please let me tell you about the people in my life whose health was damaged by air pollution.

I met a dear friend in 1985 when I transferred from the USEPA to the State of California, moved to Los Angeles and became an inspector in training. She was one of the most diligent inspectors at the DTSC. Several years later she was working in the gulf on the 2010 BP Deep Water Horizon spill. While she was there a US refrigerated logistics provider had a major release of ammonia. She was one of over 150 people exposed to the ammonia during the release. Her lungs were seriously damaged. Her health permanently impaired.

On June 1, 2012, I lost my husband Joseph Gharibian. This handsome and wonderfully unique man died at age 65 of pulmonary fibrosis. He spent much of his career working as a pipe line draftsman in a refinery in Abadan, Iran. Almost one year later on May 31, 2013, I lost a dear friend to lung cancer. She never smoked.

I know mothers who take their children to the hospital emergency room frequently due to asthma. I know how difficult it is to spend the night in the emergency room with a loved one and then attempt to resume your normal life the next day.

I know many people have this sadness in their lives.

On August 19, 2016, the Los Angeles Times had two environmental articles. The articles were together on the same page. The first article is about lead findings at three elementary schools located near Exide. I am ashamed when I read articles about Exide. We should all be ashamed.

The headline for the second article is "Clean Tech Backs Emission Bill." Mark Bauhaus is quoted in the article, "Business must stand up and say this is important." Catherine Reheis-Boyd, president of the Western States Petroleum Association is quoted to say she supports addressing climate change but fears the State's policies are "putting it at a competitive disadvantage." Does her comment mean the refineries might leave Los Angeles?

65-1
Con't

I attended and spoke at the March 4, 2016, SCAQMD Board meeting when Barry Wallenstein was dismissed. An earlier agenda item on a SCAQMD rule offered the opportunity for a number of people to speak out regarding a new rule. Apparently the final rule as adopted by the Board was an industry modified version. Senator Kevin de Leon sent correspondence to the Board requesting reconsideration of the rule. A large number of people spoke in support of the rule. An impression was created when one of the speakers asked that everyone supporting the rule stand up. Of course most of the people who stood up and supported the rule are professionals working for the petroleum industry. The people representing Environmental Justice/injustice communities are often outnumbered. I saw this again on August 16, 2016, at the SCAQMD Advisory Committee meeting. The network of professionals ready to support industry appears to be the majority on the Committee.

The new acting SCAQMD Executive Officer, Wayne Nastri offered his proposed Mission Statement and draft Goals and Objectives at a recent Board meeting:

Mission Statement

"All residents have a right to live and work in an environment of clean air and we are committed to undertaking all necessary steps to protect public health from air pollution with sensitivity to the impacts of our actions on the community, public agencies and businesses."

I found Wayne Nastri's statement of goals and objectives in the accompanying document far more persuasive than statements in the draft AQMP. I suggest that his document be incorporated in the AQMP. The 15th goal in the document calls for work with residents and community leaders in disproportionately impact communities to remedy their air quality concerns. The 16th goal discusses an assessment of the SCAQMD community response program and suggests community education on how to file a citizen complaint. My comments also discuss citizen complaints but suggest a more responsive SCAQMD.

The Del Amo Action Committee

The Del Amo Action Committee works with the community neighboring the Del Amo/Montrose Superfund sites. It is correct and appropriate for the people living and working this community to be concerned about;

- Health and Safety threats from a company repackaging large volumes of Chlorine from railroad tank cars in a plant in close proximity to where they live.
- Vapor intrusion in their homes coming from pollutants in the soil and groundwater from Montrose Chemical, the Del Amo waste pits and other major industrial facilities currently operating or closed.
- Major safety threats due to hydrofluoric tanks at the Exxon/Mobile Refinery less than three miles from their community.

It is correct and appropriate for all LA's citizens to be concerned about clean air in the Los Angeles Basin. It is correct and appropriate for all of us to be concerned about Climate Change because we are all living on a small planet where climate change has the potential to create deserts and floods and de-population of large areas of this planet. Recently NASA released a report reflecting the shrinking groundwater resources across our planet. Groundwater in the Los Angeles area is precious and must be protected. The world's largest underground aquifers – a source of fresh water for hundreds of millions of people — are being depleted at alarming rates, according to new NASA satellite data that provides the most detailed picture yet of vital water reserves hidden under the Earth's surface;

65-1
Con't

The June 11, 2016 New York Times include an editorial written by Richard Conniff. The editorial is entitled, Dear Conservatives You Can Go Green Again. With recent polls suggesting that climate change has begun to loom ominously for many Republicans as it does for the majority of Democrats, it may be time for big, bold, even alarmingly bipartisan thoughts. In the end, our need for clean air to breathe, safe water to drink, a climate that does not change too drastically and forests, oceans and wildlife that remain healthy and resilient has almost nothing to do with whether we are Republicans or Democrats, conservatives or liberals, and everything to do with being fellow residents of Planet Earth, with no place else to call home. So here's the idea: Why don't we all just take a walk and have a long conversation about how we can fix up the old neighborhood together?

The South Coast Air Quality Management District Board is empowered to improve air quality and is responsible for taking the right steps to make that happen.

The South Coast Air Quality Management District has always and will continue to have a pivotal role in improving air quality in Los Angeles and surrounding areas. An Air Quality Plan should be a foundational document for the continuing and future work of the South Coast Air Quality Management District. This document must not reflect unacceptable compromise with industries that do not want to do enough to end the pollution they create.

The comments in this correspondence are based on the following foundational principals:

Three Foundational Principals for Governing Effective Environmental Regulatory Organizations

1. **The cultural and effectiveness of any organization begins with leadership at the top.**
2. **New Technologies have driven clean air, clean water and solid waste management. New Emerging Technologies provide the key to further sustainability progress.**
3. **Laws, rules and regulations are not effective without oversight and enforcement.**

1. <u>The SCAQMD needs to fine tune the ability to recognize and respond to situations and facilities that pose an Imminent and Substantial endangerment.</u>

   The draft Plan includes a commitment to prioritize existing conditions that *"represent an imminent and substantial endangerment to public health or environment." 110(a)(2)(G)].* The SCAQMD has knowledge of existing conditions at businesses in the basin that represent an imminent and substantial endangerment to public health and the environment. Those conditions must be prioritized and the risks eliminated.

   Citizen complaints can be a source of information regarding imminent and substantial endangerment. Often those complaints come from employees of a company doing unsafe and dangerous things. The ability to respond to high priority citizen complaints is critical. This involves having the right people take the complaints. Those people must have an ability to recognize a high priority complaint and contact the right AQMD inspectors to respond to the complaint. Latter in this document I will discuss two situations involving potential substantial endangerment to public health.

65-2

2. <u>New Technologies pave a path to the future.</u> The SCAQMD must invite and encourage the development of New Technologies. These new technologies will provide effective steps in achieving clean air. The use of new technologies is apparently defined by some as the "Black Box". Open the box, open the door and welcome the future.

   The draft Air Quality Plan discusses incentives funding. A small amount of that funding could go to the creation of a New Environmental Technologies Office perhaps in conjunction with Cal/EPA. The office would have an advisory committee with members from the academic community and industrial community. Proposals for new technologies would be encouraged. The proposals would then be evaluated by technical experts in the appropriate field.

   The New Technologies Group could have an advisory committee with the knowledge and ability to bring new technologies forward. This committee could be made up of members of the academic and research communities. Please seriously consider my proposal.

65-3

3. <u>The SCAQMD is responsible for enforcing laws and regulations.</u>

   The SCAQMD must have an enforcement program capable of monitoring compliance and taking enforcement at all stationary sources in the District. Stationary source compliance with permits, laws and regulations is essential to meeting Air Quality Objectives. A strong enforcement program is critical in assuring stationary source compliance is achieved. Estimates of air quality improvement are based on permitted stationary sources in compliance with their permits, laws

65-4

and regulations. Companies operating in serious non-compliance pollute the environment and hinder progress toward cleaner air. All of Cal/EPA's Boards and Departments are developing Supplemental Environmental Project (SEP) guidelines to be used in penalty determinations. The SCAQMD should develop SEP guidelines.

Wayne Nastri's goals document calls for the inspection of all Major or RECLAIM sources at least annually and inspections of chrome plating facilities quarterly. 20,000 site visits for compliance evaluations and inspections of 3,300 portable equipment units. In addition 1,800 asbestos demolition or renovation activities. He suggests the continuation of an evaluation program for select industries.

65-4 Con't

I suggest another inspection priority; the 9 petroleum refineries posting a WARNING notice in the Los Angeles Times this week. The notice warns the public that the companies have Chemicals known to the State of California to cause, cancer, birth defects and other reproductive harm. The notice was published by BP America, Exxon Mobil Corporation, Chevron, Shell Oil, Tesoro, Phillips 66, AERA Energy, VENOCO, LLC and Valero. The inspections should be done even if it does place these companies at a competitive disadvantage.

I pray the SCAQMD has the enforcement personnel and resources to complete this critical work. Strong enforcement requires management support, trained and capable inspectors and strong legal support.

4. <u>The Petroleum Industry must maximize air pollution reduction.</u>

A fire at the Chevron refinery in Richmond in August 2012 raised public questions and concerns about refinery safety and emergency response in California. Following a directive from the Governor Cal/EPA formed an Interagency Task Force on Refinery Safety. The Task Force membership includes ten state agencies, U.S. EPA, and local agencies from areas of the state that contain refineries. On July 2013 a report on "Improving Public and Worker Safety at Oil Refineries" was completed. Can I assume the SCAQMD participated in this work? On July 16, 2016, California announced regulatory proposals to improve safety at the refineries. The regulatory proposals are intended to make California refineries safer both for workers and surrounding communities.

65-5

Recently the California Department of Industrial Relations and the California Office of Emergency Services published draft regulations to improve worker safety at refineries and adequate emergency response to a fire or release. The new regulatory programs should support the work the SCAQMD does with the refineries in our area.

The petroleum industry infrastructure in Los Angeles is antiquated (most of the refineries began operating in the 1910-1920 time period). The petroleum refineries have high risks for accidents and pose continuing health threats to the people living near and working in the refineries.

Wayne Nastri's 5th goal statement calls for the further development of enhanced emissions/ambient monitoring capabilities. Under this goal the SCAQMD would conduct comprehensive research by evaluating a variety of advanced optical remote sensing technologies for the purpose of providing SCAQMD and the public with enhanced real and near real time monitoring capabilities that will ultimately result in improved control efficiencies and compliance. Four advanced optical technologies will be initiated and demonstrated in the field to characterize fugitive VOC emissions

from refineries, gas stations, oil wells and other point sources. This work will be additive to in stack and ambient real time demonstrations. The use of these air testing technologies will advance the SCAQMD's ability to better monitor fence line air emissions from refineries.

Last summer I testified at a USEPA hearing in Wilmington regarding refinery safety. I also prepared correspondence on the subject for submittal as a public comment. I've included that correspondence with these comments.

65-5 Con't

5. Sustainable Solid Waste Management Programs. Recently I attended a work shop sponsored by the Los Angeles Department of Public Works. The workshop showcased programs underway to maximize sustainability in solid waste management. The Los Angeles Environmental Justice network is very concerned about potential dangerous air emissions from trash to energy processes. The South Coast Air Quality Management District can provide support in the effort to modernize solid waste management by doing air quality monitoring to ensure the new trash to energy processes do not pollute the air and pose a danger to communities near the facilities.

65-6

During the Wilson Administration I was the Director of the Inland Empire Permit Assistance Center. One of Governor Pete Wilson's top priorities was to improve California's Economy. His administration convened public meetings in Los Angeles with major industry sectors. The sectors in Los Angeles included the entertainment industry, the media industry, the electronics industry and the garment industry. The Wilson Administration may have anticipated input regarding burdensome regulations stifling growth. The comments from representatives from the four sectors were surprising. When moderators sought information regarding impediments to further expansion and growth in the industries, when participants answered questions regarding why their employees don't want to move to the Los Angeles basin, all the representatives gave similar responses. They were and likely remain:

- Environmental Pollution
- Constantly congested and dangerous freeways
- Inadequacies in K-12 education

It was also interesting to learn the difficulties the sectors experienced when finding qualified employees. Participants identified two attributes their employees needed, the inability to get along with others and work in a team and the ability to find new alternatives and creative problem solving skills.

65-7

Comments on policy statements in the draft SCAQMD plan

Eliminate reliance on future technologies (CAA 182 (e)(5)) measures to the maximum extent possible by providing specific control measures which have quantifiable emission reductions and associated costs.

65-8

I don't understand the need for a goal that states that the AQMD will deny the possibilities of emerging or future technologies to the **maximum extent possible.** This statement implies that ranking high with the AQMD are existing control measures with quantifiable emission

reductions and associated costs. The cynical might suggest this means doing it all the same old way.

Why? Why is the first plan objective eliminating reliance on future technologies to the maximum extent possible? What could possibly be forward thinking in regard to this objective? What will be achieved by solely relying on current, specific control measures which may not be progressive? Why adamantly reject new technologies as the first step out of the gate? 65-8 Con't

Calculate and take credit for other planning efforts (e.g., GHG reduction targets, energy efficiency and transportation).

First, what does this mean? Second, why are the only words abbreviated in this statement GHG (I presume the abbreviation is for Green House Gas)? Third, what does this objective hope to accomplish? Does it mean that if the District plans something or if the regional planning agency plans something emission reduction credit will be given to the SCAQMD for this? 65-9

Develop a strategy with fair-share emission reductions at the federal, state and local levels.

This is an unclear statement also. Does it mean that if the basin doesn't meet air quality standards the AQMD can put the responsibility for failure on the CA Air Board or the USEPA? I'm not familiar with a fair-share emission reduction.

The plan goes on the say that the District will prioritize non-regulatory, win-win approaches. Does non-regulatory mean no rules, no enforcement? In addition special consideration and prioritization of non-regulatory strategies that contribute to the economy of the area will be utilized to reduce Ozone and PM.2.5 emissions? 65-10

It seems safe to say that the AQMD Plan objectives are not inspiring or possibly even understandable. I recommend the inclusion of Wayne Nastri's recent draft Mission Statement and Goals in the AQMP.

The plan does call for the Prioritize existing conditions that *represent an imminent and substantial endangerment to public health or environment. 110(a)(2)(G)].*

The SCAQMD has knowledge of existing conditions at businesses in the basin that represent an imminent and substantial endangerment to public health and the environment.

<u>April 7, 1990 Los Angeles Times.</u>

> *Declaring that the risks of hydrofluoric acid are unacceptable in urban Los Angeles County, the South Coast Air Quality Management District on Friday became the first government agency in the country to move toward phasing out the hazardous chemical at four oil refineries and a major i Despite objections from industry, the air quality agency set a tentative deadline of Dec. 31, 1994, for eliminating the acid at the five largest users in Los Angeles County--four oil refineries and a refrigerant manufacturing plant. The 11-1 vote came after a two-year study triggered by major oil refinery accidents involving the acid in Torrance and Texas. Only Los*

Angeles County Supervisor Mike Antonovich, an AQMD board member who argued that the move would eliminate jobs, voted against the proposal.

May 9, 2016 Daily Breeze

The Daily Breeze reported on the near miss when the Exxon Mobile air pollution equipment exploded. Equipment falling to the ground during the explosion narrowly missed the hydrofluoric acid tanks nearby. As a Representatives Ted Lieu and Maxine Waters wrote a letter to the South Coast Air Quality Management District, which is studying safer alternatives to the use of the acid. When exposed to air in high enough quantities, the acid can form a toxic, ground-hugging cloud that could kill or injure thousands. In 2016 The Daily Breeze also reported:

65-10
Con't

The region's air pollution watchdog has committed to studying a viable alternative to a potentially lethal chemical that puts thousands at risk of death or injury who live near the ExxonMobil refinery in Torrance and the Valero refinery in Wilmington.

From April 1990 to May 2016 is a long time for the SCAQMD to study an issue that could injure or kill thousands. Please think about what would happen if an accident did occur and thousands were injured and take the necessary action to eliminate the use of hydrofluoric acid at refineries.

In March 2016, the SQAMD made a decision to fire Barry Wallenstein, a man with extensive knowledge and experience. Numerous environmental organizations spoke out in opposition to this action. We all got one minute to express our concern. As mentioned earlier in this correspondence, the earlier agenda item was the dominant topic in the meeting. I now wish I would have taken the opportunity to speak under that agenda item. The people who spoke under that agenda item got three minutes. The majority of those speakers represented the petroleum industry.

I returned to the podium and asked for one more minute. I think everybody wondered what I was doing, I even did. In my effort to condense what I planned to say from about two minutes to one I failed to speak God's words.

In Isaiah chapter 24 the 8th Century BC prophet, poet and politician predicted that the earth would be devastated. All will be the same, the priest and the people, the master and the servant, for mistress and maid, the seller and buyer, the borrower and lender. The earth will be completely laid to waste. It will dry up and wither. Experts on Climate Change also warn us all of this devastation. They warn that the time when Climate Change will cause this wide spread devastation is uncertain. Thank you for considering my comments and the tremendous work underway at the SCAQMD.

Sincerely,

Florence Gharibian

Responses to Comment Letter from Del Amo Action Committee (Florence Gharibian)
(Comment Letter #65)

Response to Comment 65-1:

Staff appreciates the work done by the Del Amo Committee and shares the air pollution concerns in the region that affects the environment and public health of the population. The Draft Plan has been revised to highlight the proposed regulatory action and reiterate the importance on focusing on Environmental Justice areas.

In regard to the AQMP advisory group, it is comprised of approximately forty individuals drawn from a cross-section of the community representing major businesses, small businesses, environmental groups, government agencies and academic researchers. The membership was originally approved by the SCAQMD Governing Board at its February 7, 2014 meeting.

Response to Comment 65-2:

Staff agrees that response time is critical in determining the potential problem and source of the problem. The SCAQMD has a well-established complaint line, effective permitting program, educated and available enforcement team, an extensive monitoring system, on-going source testing practices, as well as experienced public outreach division. The SCAQMD is also a CEQA lead agency that evaluates the impacts of large air polluting projects and oversees implementation of measures to mitigate significant adverse impacts. Staff intends to continue to prioritize complaints of dangerous situations and work to remedy the situation to the best of our ability.

Response to Comment 65-3:

Staff agrees with the need to deploy new cleaner technologies in all appropriate areas. The Revised Draft Plan includes new language to prioritize maximizing emission reductions utilizing zero-emission technologies when cost-effective and feasible and near-zero emission technologies in all other applications.

Staff appreciates the suggestion for creating a New Environmental Technologies Office. The SCAQMD currently has a Technology Advancement Office that cosponsors low- and zero-emission and clean fuel technology development and demonstration projects in a cooperation with private industry, technology developers, and local, state, and federal agencies.

Response to Comment 65-4:

Please see Response to Comment 65-2 regarding the established permit program and other effective tools implemented by the SCAQMD. The SCAQMD has a strong enforcement program that has a mandate under both state and federal law to enforce health standards. Staff appreciates your comment on inspection priorities. The suggestion regarding the development of SEP guidelines is not part of the AQMP, but will be directed to the General Counsel's office.

Response to Comment 65-5:

The 2016 AQMP is comprised of a series of regulatory control measures including one that would assess the RECLAIM program (CMB-05) and another focused on gas handling from non-refinery flares (CMB-03)

which primarily can be found at oil and gas production sites. In addition, there is a proposed control measure (FUG-01) to improve detection of leaks with some of the new technologies mentioned by the commenter.

Response to Comment 65-6:

Staff shares the concern regarding new processes that could generate unwanted secondary impacts and in particular how it would affect air quality.

Response to Comment 65-7:

Air pollution is not only a deterrent for new businesses and employees, it also affects the health and work productivity of the existing workforce, and thus potentially impacting the success of businesses. These concerns are more reasons to continue to work towards reducing air pollution in our region.

Response to Comment 65-8:

The concern raised by the commenter requires clarification. The Clean Air Act (CAA) allows for areas of extreme non-attainment to rely on future technologies that have yet to be developed as part of the emission reduction package that is used in the modeling to demonstrate future attainment of the federal air quality standards. It is commonly referred to as a long-term measure or "black box" because the specific action to achieve those reductions in undefined. Again, this is allowable under the CAA but the Plan objective quoted by the commenter is a goal to eliminate reliance on a "black box" and actually define a pathway to achieve all of the future emission reductions. New technology is not being rejected but rather defined and promoted. Staff knows that zero and near-zero emission technology will be key to meeting the standards. The Plan defines the targeted sources such as on-road vehicles, off-road equipment, aircraft, ships and locomotives, and promotes the deployment of zero emission technologies, when cost effective and feasible, and near-zero emission technologies in all other applications.

Response to Comment 65-9:

Some measures will achieve emission reductions of criteria pollutants by determining the co-benefits from the implementation of existing regulations, such as greenhouse gas (GHG) requirements and energy efficiency programs. The SCAQMD will be responsible for tracking the emission reductions and justifying why those reductions will be permanent, enforceable, surplus and quantifiable before earning credit for those reductions in the State Implementation Plan (SIP).

Response to Comment 65-10:

Please see Responses to Comments 30-5 and 54-2 regarding the meaning of "fair share" reductions and Chapter 10 of the Plan for more information regarding climate change concerns.

Regarding safety concerns of hydrofluoric acid, since it is not a criteria pollutant it is not included in the AQMP. However, Proposed Rule 1410 - Hydrogen Fluoride Use at Refineries is currently scheduled for consideration in 2017.

Comment Letter from Clean Energy (Comment Letter #66)

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Todd R. Campbell
Vice President, Public Policy & Regulatory Affairs

Clean Energy®

Dr. William A. Burke
Chairman, South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

September 9, 2016

Re: Comments on the Draft *Air Quality Management Plan*

Dear Chairman Burke:

On behalf of Clean Energy, please accept the following comments concerning the proposed *Air Quality Management Plan (AQMP)*.

Clean Energy has been a highly active stakeholder in exploring and recommending public policies for how the South Coast Air Quality Management District (AQMD) can meet its federally mandated clean air goals. Failure to remedy the transportation sector will result in AQMD's inability to meet the reductions of nitrogen oxide (NOx) required by the 2023 and 2031 federal deadlines, respectively. It is vitally important that such remedies promote both public health and a strong economy to achieve critical air quality, energy, and social justice goals. We hope that our comments will help to further improve upon the final document.

The draft *AQMP* proposes to implement several air quality measures with an emphasis on mobile sources, "the principal contributor to our air quality challenges." We are pleased the *AQMP* in part integrates ARB's *State Implementation Plan*, which relies upon the findings by ARB in the *Mobile Source Strategy* discussion draft that calls for the statewide deployment of 900,000 low NOx trucks powered by 50% renewable fuel blends by 2031. Specifically, this document calls for low NOx trucks that can reduce NOx emissions by at least 90% over current medium- and heavy-duty truck emission standards or 0.02 grams. Renewable fuel blends could include but are not limited to biodiesel, renewable diesel and renewable natural gas. Clean Energy and the Natural Gas Vehicle industry stand ready, willing and able to help AQMD meet its attainment goals.

66-1

WHO ARE WE?

As North America's largest provider of natural gas transportation fuel with over nineteen years of leading industry experience, Clean Energy provides construction, operation and maintenance services for refueling stations nationwide. We have a deep understanding of the growing marketplace, and our portfolio includes over 589 stations in 43 states, including a significant presence of 165 stations in California.

Already used as a clean, low carbon source of energy around the world, natural gas is abundant and proven to be a cost-saving alternative fuel to diesel and gasoline. Natural gas for transportation fuel strengthens our economy with lower fuel costs, increases our energy security, and significantly benefits our environment by reducing carbon emissions and smog-forming NOx emissions by up to 23% and 90%, respectively, relative to diesel fuel. Carbon emissions are reduced even further – approximately 80% to 90% - when renewable natural gas (RNG) is used to power our engines compared to diesel.

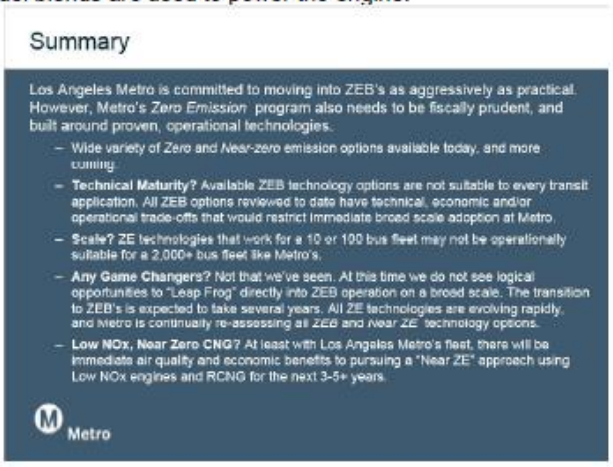
We believe it is imperative that the final draft of the *AQMP* focus on the most cost-effective measures to reduce NOx, including in-state RNG production and near zero emission vehicles that can partially or

completely run on RNG, which can provide the most significant reductions in NOx and provide the most immediate benefits for disadvantaged communities.

Next Generation Heavy-Duty Engines Powered by RNG is a Game Changer for State and Non-Attainment Regions

In May 2016 a groundbreaking report was released entitled ***Game Changer***[1] – sponsored by several stakeholders including the South Coast AQMD – which concluded there should be an immediate start to deploying zero-emission and near-zero-emission heavy-duty vehicle (HDV) technologies on a wide-scale basis in the United States. In sync with many recent documents being produced by the Air Resources Board, the report states that, "(e)xpeditious action is needed to reduce smog-forming emissions from HDVs to restore healthful air quality—as is legally required under the federal Clean Air Act—for approximately 166 million Americans who reside in areas with exceedingly poor air quality. At the same time, to combat global climate change, the United States must aggressively reduce greenhouse gas (GHG) emissions from HDVs, which are the fastest growing segment of U.S. transportation for energy use and emissions."

The report further identified that near-zero engine strategies result in 3 to 8 times more NOx reductions and have 5 to 14 times more greenhouse gas emission reductions simply because near-zero trucks are four times more cost-effective compared to fuel cell or electric vehicle options at this time. In addition, these engines help meet Short-lived Climate Pollutant reduction goals by reducing black carbon and methane, especially if renewable natural gas fuel blends are used to power the engine.

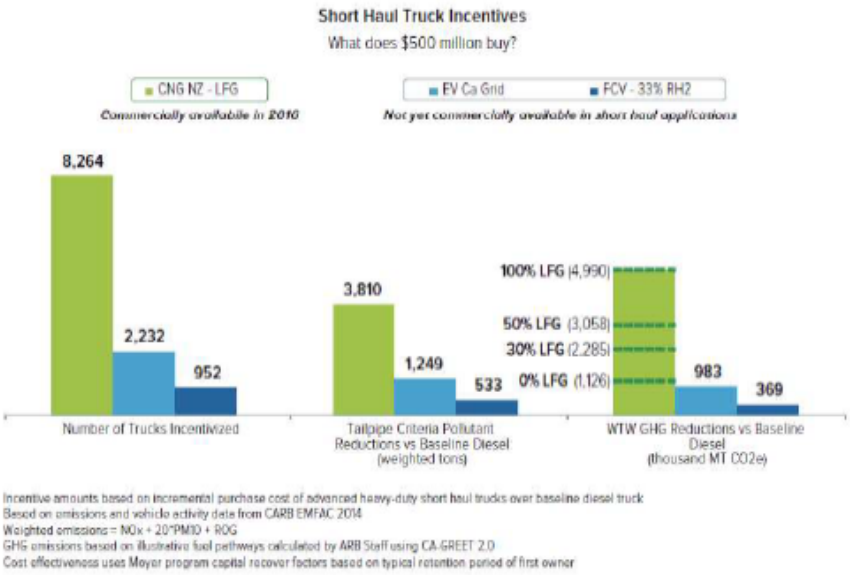


66-1 Con't

For example on cost-effectiveness, on the *APTA Clean Propulsion Committee Webinar* held on Thursday, June 30, LA Metro provided an assessment that they can get more cumulative greenhouse gas emission reductions over the next 40 years with low NOX engines using RNG at a cost that is $3-5 billion lower than zero-emission based alternatives. This is a major declarative finding for the RNG pathway with empirical data from the second largest transit fleet in the country.

And please consider this analysis by GNA considering short haul truck incentives:

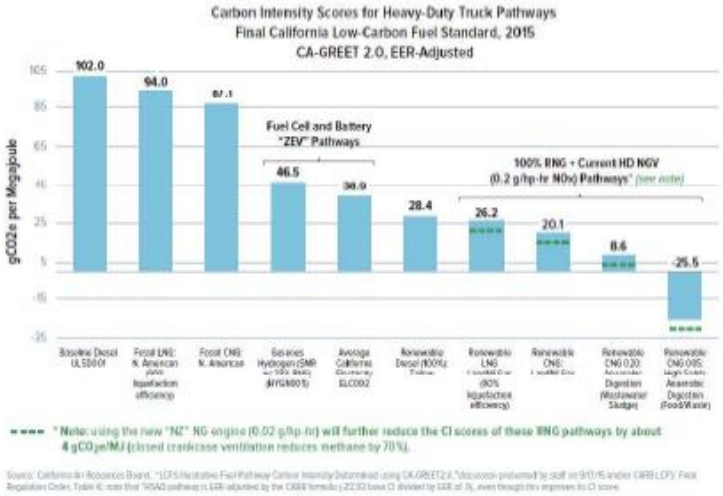
[1] http://ngvgamechanger.com/



66-1
Con't

The *AQMD* will **NOT** reach NOx and other goals without dedicating significant resources to the heavy-duty class 7 and 8 transportation sector to decrease its dependence upon diesel fuel use and increase the use of much cleaner low carbon fuels. To this end, the recent ARB-certified Cummins Westport's 0.01 g/bhp-hr NOx heavy-duty engine will play a significant role as it is a **game changer** for the transportation sector and public health. The 9L engine is now available for deployment and the 12L is expected to be certified by late 2017.

These engines will provide immediate environmental and health benefits, especially to disadvantaged communities. Returning to the ARB *Mobile Source Strategies Discussion Draft,* it specifically states on page 59, "Based on ARB staff's technology assessment, **the most viable approach to meeting the 2031 and 2030 goals is low-NOx trucks.**" In other words, **the only technically feasible way to meet the 2031 federal 8-hour ozone standards and the state's low carbon fuel and petroleum reduction goals is to deploy 900,000 low NOx trucks powered by 50% renewable fuel blends by 2031.**



These low-NOx engines set at the 0.02 g/bhp-hr standard, powered by conventional or renewable natural gas, or a blend of the two, will achieve greater environmental benefits than any electrified system for 1/5th to 1/10th the cost and far fewer operational and logistical challenges, as natural gas technology can be seamlessly integrated into large natural gas fleet operations such as drayage, goods movement, refuse, transit, and airport operations. 66-1 Con't

Game Changer supports the argument why AQMD must pursue **all** advanced technology choices, not just a focus on zero emission vehicle tailpipe strategies that have yet to be fully commercialized and are only forecasted to replace 23,000 "last mile" delivery trucks over the next 15 years.The *AQMP* should take a close look at the success stories that were enjoyed by the San Pedro Bay ports through their implementation of a joint *Clean Air Action Plan* and *Clean Truck Plan*. If we are ever to move away from polluting trucks and toward near-zero and zero emission strategies, we need to be able to have the mechanisms in place that can cull out aging trucks and replace those trucks with cleaner options.

It is unclear if the great state of California has any plans to require near-zero emission or better levels for trucks until 2023. Thus, it is clear the only way to deploy the sheer volume of near-zero trucks required to meet federal clean air standards is to develop a number of strategies at the local and state levels that include meaningful truck incentives, the phase out of older model year trucks throughout the freight system, the acceleration of RNG production statewide, and other innovative strategies.

Specific Recommendations to Meet AQMP's NOx Targets

- **The AQMP Must Include Specific Fleet Rules for Low NOx Adoption**

The challenges to reduce NOx emissions in a very brief amount of time from the mobile source sector is daunting. Specifically, the South Coast Air Basin for example must reduce its NOx emissions from mobile sources by 70% by 2023 and 80% by 2031 to reach federal ozone attainment. Such a goal would require approximately 272,000 low-NOx trucks meeting a 0.02 gram optional low-NOx value or better to be deployed in 6.5 years. One challenge for the AQMD is that the *State Implementation Plan* does not even establish a California engine standard for medium- and heavy-duty trucks at a 0.02 gram NOx value until the very year 66-2

that both the South Coast and the San Joaquin Valley are expected to reduce mobile source emission by roughly 70%. We suggest AQMD work to remedy this.

Much like the Air Resources Board's desire to accelerate zero emission-based strategies in both transit, last mile delivery, and airport shuttle fleets as outlined in the proposed document, AQMD also needs to consider creative and innovative ways to promote near zero emission trucks and buses. Specifically, AQMD should consider additional measures that touch upon fleet operations that could deploy optional low-NOx trucks and buses well before 2023. Namely, the goods movement sector would be a prime candidate for such a measure as our state's sea and inland ports, airports, railyards, and warehouses could dramatically improve regional and state air quality with the adoption of commercially available low-NOx strategies.

66-2 Con't

Further, unlike current commercial ZEV technology that is mired by cost, limited range, weight, durability, and infrastructure issues, low-NOx technologies powered by natural gas in the 6.7L and 8.9L are certified today, proven in the field, supported by existing infrastructure, and are far more cost-effective in price and operation. Additionally, an 11.9L low-NOx natural gas engine is expected to be certified as early as Q4 2017 making it possible for AQMD to consider a measure covering the goods movement sector as early as 2018-19 for implementation purposes. Providing this immediate relief to communities that are already heavily burdened by ozone, particulate, air toxics, and carbon pollution should be embraced as such measures would immediately help address air toxics goals and petroleum reduction targets while improving the opportunity to attain healthier federal ozone levels by 2023 and 2031. Consequently, such an inclusion of goods movement measures capable of deploying early low-NOx engine trucks will help make the case that both a state and federal low-NOx rulemaking is technically feasible by 2023 and 2024, respectively.

Concluding Remarks

California has aggressive emissions goals that CANNOT be realistically met without accelerating the adoption of near-zero strategies like natural gas fuel in the heavy duty vehicle sector. Most importantly, this technology is both proven and available today. Failure to provide AQMP measures that are more inclusive of near-zero emission strategies will almost certainly compromise the successful implementation of the following state goals:

- Mandated federal 8-hour ozone attainment goals for NOx reduction in 2023 and 2031;
- Improved conditions for disadvantaged communities;
- Meet the LCFS goal of 10% greenhouse gas emissions (GHG) by 2020 and 30% by 2030;
- 40% GHG reduction by 2030;
- 50% petroleum reduction by 2030;
- 80% GHG reduction by 2050;
- Significant reductions in short-lived climate pollutants.

66-3

We would like to thank AQMD staff for providing the opportunity to share our views and for considering our comments. We look forward to continuing our participation and partnership with you in this healthy discussion and process.

Sincerely,

Todd R. Campbell
Vice President, Public Policy & Regulatory Affairs
Clean Energy

Responses to Comment Letter from Clean Energy
(Comment Letter #66)

Response to Comment 66-1:

Staff appreciates the support in implementing the 2016 AQMP, in particular the mobile source strategy. Staff echoes the importance of promoting both public health and a strong economy to achieve air quality, energy and social justice goals. In response the commenter's interest in cost-effective paths to achieve the standards, the Revised Draft Plan has been modified to prioritize maximizing emission reductions utilizing zero-emission technologies when cost-effective and feasible and near-zero emission technologies in all other applications.

Response to Comment 66-2:

Staff shares the concern regarding the timing of implementation of a low-NOx standard in the state of California but also recognizes the effort that will need to take place before adoption and implementation of such a new standard. However, the modeling does not include reductions from those standards in 2023 and still demonstrates attainment as a result of other actions proposed to be fully implemented by 2023.

Response to Comment 66-3:

As discussed in Response to Comment 66-1, the Plan is seeking to achieve reductions in the near-term with the cleanest, most cost-effective technologies, as well as promoting incentives to advance deployment of cleaner technologies.

Comment Letter from Earthjustice (Comment Letter #67)

September 9, 2016

Wayne Nastri
Executive Officer
South Coast Air Quality Management District
21865 Copley Dr.
Diamond Bar, CA 91765
wnastri@aqmd.gov

Re: Comments on Draft 2016 Air Quality Management Plan ("AQMP")

Dear Mr. Nastri:

On behalf of the undersigned organizations, we submit this comment letter on the Draft 2016 Air Quality Management Plan ("AQMP" or "plan"). Overall, the plan has several systemic problems that must be fixed. First, there is an over-reliance on incentives and a lack of regulatory measures. Second, the South Coast Air Quality Management District ("South Coast AQMD" or "air district") does not commit to use all of its authority to reduce all reasonably achievable emissions and advance clean energy and clean transportation. Finally, the South Coast AQMD has failed to include viable and legally required contingency measures. These three issues must be addressed in the revised draft AQMP. 67-1

Before moving to the substance of our letter, we must address process issues. Initially, we respectfully request that the South Coast AQMD provide ample time for stakeholders to review and comment on the revised draft AQMP. Because this is the most important air plan in the last two decades, we need to make sure the plan is done correctly. That cannot happen in a rushed manner to meet arbitrary deadlines when we have already missed the initial deadline. As of today, one critically important document still has not been released – the Attainment Demonstration. In addition, the district has not released its macroeconomic impact analysis,

environmental justice analysis, or California Environmental Quality Act ("CEQA") alternatives analysis. Accordingly, we request at least 60 days to comment on the revised draft with these documents included. In addition, we request that the staff provide ample time to incorporate comments and responses to comments into the plan and the accompanying documents prepared in response to CEQA requirements. 67-1 Con't

I. The Air Quality Public Health Crisis Demands Action.

Our organizations have come together under a simple premise: South Coast air basin ("South Coast") residents should not get sick, have existing respiratory illnesses worsened, or die prematurely as a result of breathing. They have a fundamental human right to breathe clean air. Despite statements in the AQMP that pollution levels are getting better, recent monitoring results have shown that pollution reductions, particularly for ozone, are leveling off. In fact, the region continues to receive an "F" from the American Lung Association for ozone and fine particulate matter.[1] The public health imperatives that result from this failing grade are not abstract; our members and allies are suffering myriad harms from the high levels of pollution. To remedy these harms, we need a strong plan that sets us on an enforceable and mandatory path to clean air. The law requires this, and this is what the lungs of everybody in the region deserve, especially those of our children and grandchildren. 67-2

II. Incentive Programs Cannot Form the Primary Basis of the Entire Plan.

The AQMP relies too heavily on incentive programs. While our organizations are not opposed to incentive programs per se, the unprecedented level of voluntary incentive programs in this plan should create pause for everybody. The U.S. Environmental Protection Agency ("EPA") has made clear that voluntary incentive-based programs are only allowed to cover a relatively small subset of emissions reductions necessary to achieve the National Ambient Air Quality Standards ("NAAQS"). In elaborating on this position, EPA has stated: 67-3

> The limit is set at three percent (3%) of the total projected future year emissions reductions required to attain the appropriate NAAQS. However, the total amount of emissions reductions from voluntary measures shall also not exceed 3% of the statutory requirements of the CAA with respect to any SIP submittal to demonstrate progress toward, attainment of, or, maintenance of the NAAQS.[2]

Recent presentations from your agency and the California Air Resources Board ("CARB") have sought to focus on what percentage voluntary incentive programs make up –

[1] American Lung Association, 2016 State of the Air Report, 59-60, *available at* http://www.lung.org/local-content/california/documents/state-of-the-air/2016/sota-2016-full-report.pdf (The only exception is Orange County, which received a "pass" for annual P.M 2.5; Orange County received an "F" for ozone and 24 hour PM2.5).

[2] Memorandum from Richard D. Wilson, Acting Assistant Administrator for Air and Radiation, to EPA Regional Administrators, re "Guidance on Incorporating Voluntary Mobile Source Emission Reduction Programs in State Implementation Plans (SIPs)," October 24, 1997.

with barely any mention of regulations – in terms of planned emission reductions. In the presentation at the AQMP Advisory Group meeting held on August 16, 2016, South Coast AQMD staff noted that "[f]rom base year (2012), adopted regulations contribute to 68% NOx reductions by 2023 and 80% NOx reductions by 2031." This misses the point. We need large amounts of reductions moving forward – even beyond the regulations on the books now. We should be discussing what percentage of the future reductions needed come from voluntary incentive programs as opposed to mandatory and enforceable regulations. Besides, even in this scenario, the percentage reliant upon incentives amounts to unprecedented levels that EPA has never approved.

Even if the South Coast AQMD decides to move forward with this incentive laden approach, the preface concedes "[s]ecuring the necessary funding will not be easy, but through coordinated advocacy and outreach, integrated planning, coalition building, key partnerships, and political will, it is within reach."[3] These "buzz words" mean nothing when it comes to creating an enforceable plan. Political will or coalition work does not convert a voluntary and unfunded program into a legally compliant enforceable plan. The plan does not include assurances that adequate funds are available to carry out the plan as required by Section 110(a)(2)(E) of the Clean Air Act.[4] 67-3 Con't

Finally, while we are very happy that the AQMP has committed to move beyond the often abused "black box," which has prevented clean air progress in the region, we are concerned that the current approach creates a whole new set of problems. This stems from the fact that the South Coast AQMD acknowledges that "specific technologies needed to achieve the ozone standards are well-defined."[5] But, instead of requiring these technologies or asking CARB to require these technologies, the plan proposes an unfunded voluntary incentive-based approach to incorporate these technologies into the region. The District has exchanged a "black box" for an "empty cash box," which will not work and does not meet the mandates of the federal Clean Air Act and California's Health and Safety Code. Securing sufficient funding to achieve attainment under the proposed scenario would take a miracle. State and federal law do not allow the South Coast AQMD to rely upon miracles to demonstrate future compliance in its clean air plans. Attainment demonstrations must be based on legally enforceable, quantifiable, verifiable, and reasonably achievable emission reductions, not wishful thinking and unrealistically optimistic theoretical projections about securing funds from unwilling sources. Flying pigs and $14 billion for clean air investments exist only in fantasy. The AQMP must be based in reality.

III. The AQMP Must Include Additional Commitments to Regulations.

At the August 16, 2016 AQMP Advisory Group meeting, the South Coast AQMD staff mentioned that they had previously looked under every stone for control measures. We are 67-4

[3] Memorandum from Richard D. Wilson, Acting Assistant Administrator for Air and Radiation, to EPA Regional Administrators, re "Guidance on Incorporating Voluntary Mobile Source Emission Reduction Programs in State Implementation Plans (SIPs)," October 24, 1997.
[4] Draft AQMP, Table 1-3.
[5] Draft AQMP, Preface and ES-4.

pleased that they noted they would look again to see if there are control measures that could aid in achieving the NAAQS and the California Ambient Air Quality standards ("CAAQS"). However, also during that discussion, we became concerned that there was an improper lens in which staff will be reviewing control measures. We are fearful that in evaluating proposed control measures, South Coast AQMD staff will summarily dismiss proposed control measures out right claiming the pollution reductions are too few given the work to adopt a regulation.

First, we must express extreme frustration with the pattern of inaction in prior State Implementation Plans ("SIPs") to advance strategies to close the "black box". For decades, many of our groups have been pushing the South Coast AQMD to identify what it will take for the region to meet ozone NAAQS. Despite these consistent pleadings, this has never happened. Now, staff appears to claim that the lack of time before 2023 means regulatory control strategies are precluded because of timing related to passing regulations and providing sufficient time for the clean technology to be implemented. 67-5

Second, when looking at regulatory options, the staff seems hyper-focused solely on the 2023 attainment deadline. While we acknowledge the importance of this deadline, we must be mindful that we cannot make the same mistakes we have made for decades in planning – i.e. not adopting regulations soon enough to tackle the "black box". Thus, we need to think about what actions need to be put in place now for the 2031 deadline given we have 15 years.

Finally, we suggest that the South Coast AQMD view potential regulatory strategies under the notion of not allowing new development and replacement of equipment to make matters worse. Clean energy and clean transportation options exists now, and there is no reason we should be allowing continued use of polluting equipment moving forward, when the current plan's strategy is just to raise taxpayer dollars and fees to pay to replace that equipment down the road.

IV. The District's Control Strategy Must be Enhanced.

While there are many regulations that should be adopted, we suggest enhancements to the following regulations now.

A. CMB-02 – Emission Reductions from Commercial and Residential Space and Water Heating (NOx).

67-6

CMB-02 is a very important commitment for the air district. However, the current measure as drafted makes little to no sense. Importantly, the South Coast AQMD should at a minimum make sure that future development does not incorporate technologies that will need to be replaced in five or ten years, and will require raising taxpayer dollars and fees to pay for these replacements.

Importantly, the AQMP concedes: "One readily available option is to use electric water and space heaters."[6] The Draft AQMP further concedes: "[t]he initial purchase price of these

[6] Draft AQMP, at IV-A-61.

units is often less than gas water heaters and furnaces."[7] Even if electric heaters are not desirable for consumers, the Draft AQMP discusses "air to air heat pump water heaters," which are "reasonably priced" and are a cost-effective option for reducing NOx and heating water for residences and small commercial properties." The South Coast AQMD should adopt regulations requiring cost effective equipment in the AQMP given that the cost-savings exist now.

Second, we are concerned about raising $50,000,000 to pay to replace 50,000 swimming pool heaters in the South Coast air basin. Even though we vehemently disagree with using taxpayer dollars to replace pool heaters in single family homes, even if the District pursues this approach, the cost is very high – i.e. $50,000 per ton of NOx reduced. And like water heaters, there is no reason we should be allowing new pools to be built without requiring available zero emission technologies.

Third, the measure should include requirements on space heating. Space heating represents 37% of residential gas use and 36% of commercial gas use in California, totaling approximately 2.79 billion therms of natural gas consumption per year.[8] Most space heating is powered by direct combustion of natural gas, contributing to significant NOx emissions. There are several options for zero emissions (or low emissions) space heating technologies that do not rely on direct combustion of natural gas or propane. One of the best options is a ductless mini-split system heat pump space heater. 67-6 Con't

Ductless mini-split-system heat pumps are an excellent option for heating and cooling in new construction, home additions, multi-family (condo or apartment) housing, and to improve comfort in poorly heated or cooled rooms. Mini splits have no ducts, so they avoid the energy losses associated with the ductwork of central forced air systems. Duct losses can account for more than 30% of energy consumption for space conditioning, especially if the ducts are in an unconditioned space such as an attic.

B. MOB-01 – Emission Reductions at Commercial Marine Ports (NOx, SOx, CO).

We are outraged that the South Coast AQMD in the fine print on page 109 of Appendix IV-A is proposing to abandon the important Port Backstop Rule – IND-01. Abandoning this rule has taken place with no public process. Instead, the public has been forced to find out about this change by small font buried in an Appendix of the Draft AQMP. The egregious nature of this change is compounded by the concession that the ports "collectively are the single largest fixed source of air pollution in Southern California."[9] If the South Coast AQMD dares to abandon its prior commitment to make sure the ports live up to their voluntary promises, the approach outlined in MOB-01 will not protect our air.

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[7] *Id.*

[8] California Residential Appliance Saturation Survey (2009). Commercial End Use Survey (2006)

[9] Draft AQMP, at IV-A-110.

We are aware of few other industries that are allowed to write the rules of how they will achieve emissions reductions. The South Coast AQMD needs to provide more details on how much pollution reductions the Ports of Los Angeles and Long Beach need to achieve. It is not appropriate to kick the can down the road in identifying how many reductions in precursor emissions must occur to facilitate meeting deadlines in 2019, 2022, 2023 and 2031.

It is important to be clear about the need for a port backstop rule and why the South Coast AQMD adopted IND-01 in the first place. After enormous pressure from community groups, environmental organizations, and air quality regulators, the Ports adopted a Clean Air Action Plan in 2006. In that plan, the Ports made commitments to meet certain air pollution reduction milestones. South Coast AQMD incorporated those commitments into the baseline emissions inventory in the last AQMP. Failure to deliver those emission reductions would make the emissions inventory inaccurate and bring the attainment demonstration into question. In response, the Ports argued vehemently against the inclusion of a backstop rule commitment in the last AQMP. Their objections brought into question the honesty and sincerity of their Clean Air Action Plan commitments. Port air pollution must be controlled and reduced in order to attain state and federal air quality standards. Caving into the Ports and abandoning IND-01 makes the achievement of those emission reductions uncertain, and brings into question the accuracy and thoroughness of the new baseline emissions inventory.

67-6
Con't

Finally, ambiguities in the draft plan make it impossible for commenters to provide competent input on the strategy. Importantly, the measure states the following –

> This AQMP measure is designed to provide an ability for the Ports' actions to be credited in the State Implementation Plan after the emission reductions have occurred. If the actions are to be credited in the SIP, assurance must be provided that, if emissions do not continue to meet projections, the Ports working with affected stakeholders will develop and implement actions to get back on track, to the extent that cost-effective and feasible strategies are available. A demonstration to U.S. EPA will need to be made that the actions meet U.S. EPA's guidance in order to be credited into the SIP.[10]

Commenters must see the actual commitments and the demonstration that will be made to U.S. EPA. Given this, we require that this information from the Ports be provided in the revised draft AQMP to provide commenters the ability to provide input. This could be done at an upcoming AQMP Advisory Group meeting because both ports have representation on the group. The need to really push the ports to clean up their pollution is exemplified by the August 19th letter they submitted on the AQMP. These port authorities clearly do not see the urgency in meeting clean air standards because they argue that the AQMP can ignore deadlines before 2031. Moreover, they do not want to be held accountable for reducing emissions. These port authorities need to understand that the Clean Air Act creates mandatory duties to bring clean air to the South Coast; we have long since past the time when we can allow the ports to solely rely on voluntary programs to clean up their highly polluting operations.

[10] Draft AQMP, at IV-A-111.

C. Fleet Rules

Ample legal authority exists to push forward clean vehicles ranging from light duty equipment to heavy duty equipment. Even though local jurisdictions like the South Coast AQMD are preempted by federal law from adopting emissions standards and limitations, they have authority to adopt fleet rules and indirect source regulations.

The District may "direct[] state and local governmental entities to purchase, procure, lease, or contract for use of vehicles meeting specified air pollution criteria." *See Engine Mfrs. Ass'n v. South Coast Air Qual. Mgmt. Dist.,* 498 F.3d 1031, 1045-46 (9th Cir. 2007). However, this authority is not boundless because rules governing purchases of new vehicles by private actors (at least, beyond those under contract with a government entity) are likely pre-empted by the Clean Air Act. *See Engine Mfrs. Ass'n v. South Coast Air Qual. Mgmt. Dist.,* 541 U.S. 246, 258-9 (2004) (citation omitted)).[11] But the authority exists, and the District should use it.

The District has, in the past, applied its fleet rules to state and local public entities, including the State of California, counties, cities, public districts, and private entities under contract to such entities *(*Advisory Notice to Fleets Subject to SCAQMD Fleet Vehicle Rules 1186.1, 1191, 1192, 1193, 1194, 1195 and 1196 (July 20, 2005- noting that rules will not be applied to private entities, or the federal government).

67-7

The government fleets in question are substantial; in 2000, the District estimated that fleets governed by the light- and medium-duty rule (Rule 1191) had a population of roughly 44,000 vehicles (Staff Report, Proposed Rule 1191, Att. 2). The Heavy Duty rule covers fleets that comprised nearly 7,000 vehicles in 2000 (Staff Report, Proposed Rule 1196, App. B).

One study found that government automobiles tend to travel an average of 12,000 miles per year, with heavier-duty trucks travelling only slightly less (11,000 miles per year).[12] These are smaller figures than within the private sector. The same study found the replacement cycle for government automobiles to range from 5 to 7 years.[13] One would expect, therefore, the fleet rule to have relatively rapid effects.

These effects would also include support for the creation of a viable clean vehicle market and economic incentives for vehicle manufacturers to develop and sell more clean vehicles to a wider range of customers. The impact of a regional commitment to clean government fleets should not be underestimated. If the South Coast AQMD is to achieve clean air, it will have to have clean vehicles. The momentum to get the prerequisite clean vehicle development commitment from manufacturers could start with the adoption of aggressive fleet rules.

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[11] Note, however, that EPA could authorize the District to regulate private fleets, by waiving the Act's pre-emption provisions pursuant to 42 U.S.C. 7543(b). We recommend that the District petition EPA to do so.
[12] P.S. Hu and M.Q. Wang, State Vehicle Fleets and Their Potential Acquisition of Alternative Fueled Vehicles under EPACT 507 (1996). http://ntl.bts.gov/lib/000/700/722/507.pdf.
[13] *Ibid.*

The Plan should commit to adopt new and update the existing fleet rules. These changes should be done to require zero emissions vehicles in fleets throughout the basin, particularly those well suited for zero emission technologies. 67-7 Con't

D. Small Off-Road Engines (SORE).

While we understand that CARB has the general legal authority over SOREs, the District could make sure that new developments are conditioned on using zero emission models in their landscaping and lawn care. This type of use of indirect source authority will help reduce the need for incentives to reduce pollution from this large source of the emissions inventory. 67-8

E. Warehouses and Distribution Centers.

The AQMP must include a commitment to develop an indirect source rule for warehouses. The Inland Empire has seen a proliferation of these facilities in the last decade. In addition, the Southern California Association of Governments projects even more warehouse space will be built or retrofitted in the coming years. These facilities contribute to major impacts and are sited in places that routinely show high levels of ozone and fine particulate matter. Thus, it is imperative that there finally be a commitment to adopt an indirect source rule to control pollution from these facilities. 67-9

F. The NOx Regional Clean Air Incentives Market ("RECLAIM") Commitment Does Not Resolve Fundamental Flaws with the Program.

The RECLAIM program is broken. The AQMP should commit to shifting to a command and control system that will make sure large emitters like refineries actually install pollution controls, rather than just buying credits. This is especially important since most of the refineries are in the Ports area which has the highest air toxics risk in the basin (over 1200 per million).[14] 67-10

V. The District Must Make Good On its Promise to Achieve Early NOx Reductions.

In February of 2015, several members of the public raised concerns about the deeply faulty particulate matter plan that was passed by the Governing Board. The South Coast AQMD promised early NOx reductions, and this has not happened. Instead, we continue to hear that the RECLAIM program fulfilled that promise, but it most certainly did not. By adopting the Western States Petroleum Association's delayed shave proposal, any RECLAIM Trading Credits in the years between now and 2019 are simply paper reductions and will not improve air quality. 67-11

VI. The Plan Must Create an Appendix that Includes the District's Responses to Public Comments.

South Coast AQMP staff should create an Appendix in the forthcoming Revised Draft AQMP that will include thorough responses to all the public comments submitted to the Draft Plan released on June 30, 2016. This will help ensure transparency and accountability in the 67-12

[14] South Coast AQMD, Multiple Air Toxics Exposure Study IV Report (2014).

public process. During the AQMP Advisory Group Meeting on August 16, 2016, staff presented their responses to public comments submitted to date in their PowerPoint presentation. This is not sufficient. Their responses were not detailed enough, and often misinterpreted the public comments that were submitted. 67-12 Con't

VII. The Plan Must Include Greater Commitment to Solar Technologies.

The California Health and Safety Code contains a clear mandate that air quality plans "incorporate solar energy technology into its air quality management plan in applications where it can be shown to be cost-effective.[15] It is not enough to passively take credit for other programs that the State administers. The South Coast AQMD must do more. We request the South Coast AQMD lay out plans to require solar energy technology in new construction and major remodels, and to see these incorporated into the forthcoming revised AQMP draft. 67-13

VIII. Compliance with state level CAAQS Requirements.

We are disappointed that Chapter 8 of the Draft AQMP discusses the new federal 8-hour ozone standard set at 70 parts per billion ("ppb"), but does not develop a strategy to achieve the additional 25 tons per day ("tpd") reductions needed to meet that standard. We remind the South Coast AQMD that the current CAAQS for the 8-hour ozone standard is set at 70 ppb. The Lewis Presley Air Quality Management Act is abundantly clear that "a comprehensive basinwide air quality management plan must be developed and implemented to provide for the rapid abatement of existing emission levels to levels which will result in achievement and maintenance of **state** and federal ambient air quality standards and to ensure that new sources of emissions are planned and operated so as to be consistent with the basin's air quality goals."[16] There is no basis for the conclusion that this plan can ignore the current state ambient air quality standard for the 8-hour ozone standard, which was established in 2008. Importantly, we reserve the right to provide additional comments on this issue at the moment because Chapter 6 of the Draft AQMP cross references more details being provided in "Appendix VI: Compliance with Other Clean Air Act Requirements," which has yet to be released. The South Coast AQMD website states that this appendix was expected to be released in early August. It's already the beginning of September, and the public has not seen anything yet. Due to this delay, we request that the South Coast AQMD provide the public with a 30-day comment period after the release of this appendix in order to provide comments based on specific information, and not just a placeholder on the website. 67-14

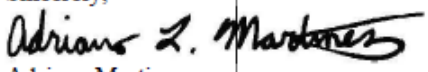
IX. Conclusion

We appreciate your consideration of these comments. We request that our comments and the staff response to our comments be included in the administrative record for any decision being made by the South Coast AQMD Governing Board about the AQMP and for any

[15] Cal. Health & Safety Code, § 40404.5.
[16] Cal. Health & Safety Code, § 40402(e).

environmental impact review under CEQA. We hope that the agency will actually listen to our input as opposed to many decades of instances when our comments have been ignored. The health of ourselves and our children and grandchildren is at stake. 67-14 Con't

Sincerely,



Adriano Martinez
Angela Johnson Meszaros
Earthjustice

Evan Gillespie
Sierra Club

Michele Hasson
Center for Community Action & Environmental Justice

Martha Dina Argüello
Physicians for Social Responsibility-Los Angeles

Fabiola Lao
Coalition for Clean Air

Bahram Fazeli
Communities for a Better Environment

David Pettit
Natural Resources Defense Council

Taylor Thomas
East Yard Communities for Environmental Justice

Responses to Comment Letter from Earthjustice
(Comment Letter #67)

Response to Comment 67-1:

The 2016 AQMP does propose a number of regulatory measures aimed at reducing NOx and VOC emissions from a variety of stationary and mobile sources. These regulatory measures were established after a thorough analysis of all ozone-emitting sources and available methods and technologies to further reduce emissions. Incentive-based approaches are focused on accelerating high-emitting sources to transition to cleaner technologies sooner than would take place under regulations. Some sources are beyond the authority of the SCAQMD. Incentives are one way to gain emission reductions sooner than natural turnover of vehicles and equipment. Accelerating the deployment of cleaner technologies before future rulemaking is established allows the new technology to be commercially available, achieved in practice, feasible in more applications, cost effective, as well as publicly acceptable. The specific sources of funding have yet to be finalized, but staff is working on developing the Financial Incentive Funding Action Plan that maps out the possible opportunities to ensure the proposals have secured funding. Such funding is being sought on a federal, state and local level. To ensure the reductions are creditable in the SIP, the U.S. EPA does require these reductions to be quantifiable, surplus (beyond regulations), permanent and enforceable. With such integrity elements in place, the incentive actions can be effective and provide lasting improvements.

The release of the Draft AQMP in June 2016 was designed to allow the public to become familiar with the proposed strategy and provide comments to be included in a Revised Draft Plan. Release dates have been staggered for the Draft Program Environmental Impact Report (PEIR) and Socioeconomic Assessment in order for the supporting documents to analyze the latest version of the Plan. As such, the costs and benefits analysis was released August 31, 2016 and the PEIR was released mid-September in time for review of the Revised Draft Plan that was released early October. Similarly, Appendix V and VI did lag behind the release of the Draft Plan but were available by September and provided over 30 days to review and comment. All those comment periods overlapped to allow for a comprehensive, concurrent review by the public.

In addition, staff is providing a 60-day public review and comment period for the PEIR and while each of the draft Socioeconomic chapters have been given a 30-day public review and comment period, a complete updated Socioeconomic Assessment with appendices was released in November for another 30-day public review and comment period. Comments on the Revised Draft Plan we were encouraged to be provided 30-days after its release so staff could incorporate changes into the Draft Final Plan scheduled to be released in early December. Finally, at their October meeting, the SCAQMD Governing Board accepted delaying consideration of the 2016 AQMP until February 2017.

Response to Comment 67-2:

Staff understands and shares the same concerns regarding public health due to poor air quality in our region.

Response to Comment 67-3:

Please see Response to Comment 67-1 regarding the regulatory efforts put forth in the Revised Draft Plan.

Staff appreciates the support for the incentive programs and understands the concern with the amount of needed funding. A Financial Incentive Funding Action Plan was prepared as a companion document to the 2016 AQMP (http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/draftfinancialincentivefunddec2016.pdf?sfvrsn=6). The plan will provide an analysis of potential funding opportunities and proposed actions to be taken to secure the funding identified in the AQMP. The Financial Incentive Funding Action Plan will also include activities to pursue funding, the schedule, and reporting commitments. As shown in that Plan, even a very small VMT fee could generate $1 billion annually. Staff does not intend to rely on a single funding source. Pursuing the funding will require an analysis of authority, formation of a stakeholder working group, creation of a national collaborative comprised of National Association of Clean Air Agencies (NACAA) for state/local air agencies, private sector members (engine manufacturers, Manufacturers of Emission Controls Association (MECA), trade associations, labor unions, etc.) and non-government organizations (local, state, national). Collaboration with the state will include California Air Pollution Control Officers Association (CAPCOA) and state/local partnerships, and other stakeholders. EPA has indicated that incentive measures may be approvable under the "enforceable commitments" mechanisms which would allow a greater percent of reductions than the 3% referred to in the comments.

Response to Comment 67-4:

The Revised Draft Plan includes the addition of future rulemaking for two of the previously incentive-only measures (CMB-01 and CMB-02). Please see Response to Comment 67-1 regarding the role incentive measures can play in achieving fast approaching deadlines by 2022 and 2023 for the 1-hour and 1997 8-hour ozone standards, respectively. Achieving these standards solely through regulation would not be realistic.

Response to Comment 67-5:

CMB-02 includes future rulemaking and will impose feasible requirements for space heating and water heaters. Staff will consider the technologies mentioned and encourages manufacturers to submit additional information supporting the feasibility and cost effectiveness of proposed technologies.

Response to Comment 67-6:

With regard to the facility-based measures including MOB-01, during the public process, SCAQMD staff will seek input and comments on identifying actions that could be voluntary or regulatory nature. The SCAQMD staff will report to the SCAQMD Governing Board on progress in identifying actions. However, if actions are not identified or incentive funding is not sufficient to achieve additional emission reductions, the SCAQMD staff will recommend to the SCAQMD Governing Board the development of rules within the SCAQMD authority or other enforceable mechanisms. Staff is proposing that a recommendation be made within one year from the adoption of the Final 2016 AQMP. The new language can be found in the updated MOB-01 write-up located in Appendix IV-A of the Revised Draft Plan.

Response to Comment 67-7:

MOB-08 has been modified to reflect enhancing the existing fleet rules and the updated MOB-08 description can be found in Appendix IV-A of the Revised Draft Plan. Requiring zero-emission public fleets may require additional authority from the state legislature since current law sets a benchmark of "methanol or other equivalently clean burning alternative fuels." H&S §40447-5

Response to Comment 67-8:

Staff appreciates the comment and is aware of the emission reduction opportunities in the small off-road engines (SORE) category. In order to increase the penetration of new low emission and zero-emission equipment in SORE category, MOB-11 is proposing to expand the District's existing lawn mower and leaf blower exchange program to cover larger commercial lawn and garden equipment that are subject to federal preemption or may not be required to turnover to newer equipment. This expansion will be accomplished by increasing the number of exchange events and available funding for these programs. In addition, other SORE equipment may also be considered for exchange programs for accelerating the turnover of existing engines. Finally, such cleaner SORE equipment could be a mechanism for complying with EGM-01 regarding new development.

Response to Comment 67-9:

Please see Response to Comment 67-6 regarding the facility-based measures, including warehouses.

Response to Comment 67-10:

CMB-05 proposes a re-assessment of the RECLAIM program, which has been modified to reflect a serious consideration of phasing out the program and shifting to a command and control system. The updated CMB-05 description can be found in Appendix IV-A of the Revised Draft Plan.

Response to Comment 67-11:

The 2016 AQMP is a comprehensive Plan with committed reductions to be achieved in both 2023 and 2031, thus attaining the ozone standards by the required deadlines. Staff continues to work on regulation and other program implementation to reduce NOx emissions both in the short-term and the long-term.

Response to Comment 67-12:

A separate document will be provided with all the comment letters received that will also include specific responses to each of the comments. The release of this document is expected to be in December after the release of the Draft Final Plan.

Response to Comment 67-13:

Solar technologies are discussed throughout the 2016 AQMP and are considered as an option in a number of proposed control measures including the energy climate change (ECC) measures. Solar technologies can be cost-effective for NOx reductions when combined with other technologies and will also be considered for other measures such as CMB-01 and CMB-02.

Response to Comment 67-14:

Staff is aware of the need to work toward achieving the state standards that are in some cases more stringent than the current federal standards, although the strengthening of the federal standards are beginning to align with the state standards. The challenge of meeting the federal standards has been an on-going struggle for this region for a variety of reasons such as technological feasibility and wide-range public acceptance of new technologies and products. The 2016 AQMP represents an "all of the above"

approach, and thus the maximum feasible continued progress towards meeting State standards is assured.

Please see Response to Comment 67-1 with regard to the timing of the release of supporting appendices and the ample time provided for public review and comment.

Comment Letter from Altergy Systems (Comment Letter #68)

DRAFT 2016 AIR QUALITY MANAGEMENT PLAN

2016 AQMP Comment Form

Please enter your contact information, comments and/or upload comment files below. The information collected may be used to provide further information about public workshops and hearings, and other events related to the 2016 AQMP. Responses to comment will be compiled and included in the final Plan package.

*Fields Required to Submit a Comment

Form Information

Date Created	Time Created	AQMP Year
09/27/2016	9:26 AM	2016

Commentor Contact Information

Commentor's Name*	Organization*	City	State	Zip Code
CORINNE VITA	ALTERGY SYSTEMS			

If not representing a specific organization, please enter "No Affiliation".

Comments (Unlimted Size)

Can you include language in the control measure for customers who put in fuel cells instead of generators at NEW SITES – not removal of existing generators but using the control measure incentive to prevent them from putting in generators at new sites?

I spoke with a few customers, they may not take their generators out but they would use the incentive program to put fuel cells in at new sites where they would of put in generators.

The best control measure would include incentives for customers to take out generators and replace with fuel cells and for customers who choose to put in fuel cells at new sites instead of generators.

68-1

Upload Additional Comment and Supporting Files (30 Mb Maximum per file)

AQMP Comments Files

Note: Supported upload files include all versions of Microsoft Office, jpeg, tiff, PDF, mp3, mp4, and text files.

Commentor Signature*

For More Information Contact: Angela Kim (akim@aqmd.gov) (909) 396-2590

Responses to Comment Letter from Altergy Systems
(Comment Letter #68)

Response to Comment 68-1:

The 2016 AQMP control measure CMB-01 has already included language on development of fuel cells at new sites, as well as replacing the existing generators with fuel cells or other technologies where feasible.

Comment Letter from David W. Brown (Comment Letter #69)

Preliminary Draft
Socioeconomic Report for 2016 AQMP

Please enter your contact information, comments and/or upload comment files below. The information collected may be used to provide further information about public workshops and hearings, and other events related to the Socioeconomic Report for 2016 AQMP. Responses to comment will be compiled and included in the final Report package.
*Fields Required to Submit a Comment

Form Information

Date Created	Time Created	AQMP Year
08/31/2016	12:16 PM	2016

Commentor Contact Information

Commentor's Name*	Organization*	City	State	Zip Code
DAVID W. BROWN	NO AFFILIATION	COOS BAY	OR	97420

If not representing a specific organization, please enter "No Affiliation".

Comments (Unlimted Size)

As someone who considers himself an environmentalist, I believe that the most exciting affordable technology to implement to drastically reduce NOx in numerous industrial applications is the Duplex Technology developed by ClearSign Combustion. Those working for SCAQMD would do well to further investigate this technology (that is currently working at an Aera Energy Once Through Steam Generator in California and at Kern Energy in Bakersfield in a refinery heater. It is also installed in at least several well-head flares in California (undisclosed company and location at this point but in CA per the company). Duplex can work in any flame based technology. Industrial boilers are the next frontier for the company along with industrial applications in industries like paper, chemical, cement and steel plants. Full disclosure: I am a shareholder in the company, but have no affiliation with CLIR regarding my employment.

69-1

Upload Additional Comment and Supporting Files (30 Mb Maximum per file)

Socioeconomic Report Comments Files

Note: Supported upload files include all versions of Microsoft Office, jpeg, tiff, PDF, mp3, mp4, and text files.

Commentor Signature*

For More Information Contact: Angela Kim (akim@aqmd.gov) (909) 396-2590

Responses to Comment Letter from David W. Brown
(Comment Letter #69)

Response to Comment 69-1:

Thank you for providing the Duplex Technology information to reduce NOx emissions in industrial applications. Staff will review this technology in detail during the rulemaking process.